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Address

THE SCOPE AND AIM OF STATE SANATORIA FOR TUBERCULOSIS.*

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During the past ten years, the civilized world has seen an astonishing change take place in the method of treating the disease which leads the mortality list in densely populated communities. Dr. Bodington, of England, over half a century ago, was one of the first, if not the first, to advocate the treatment of tuberculosis by fresh air in properly regulated sanatoria; but it is apparently authentic that before he could substantiate his opinions the poor man ended his days in an insane asylum. Whether he was placed there by friends on account of his advanced theories, which doubtless at that period were regarded as symptomatic of madness, or for genuine reasons, is thought by some to be a matter of doubt. It remained for Herman Brehmer not many years afterward, however, in the mountains of Silesia, to prove that consumption could be cured, and although ridiculed at first by his own profession, he had the happiness of living to see his ideas well established in his own country and finally take root and grow in other lands.

For years his followers abroad and in this country patiently carried out his ideas, finally convincing the skeptical that the new methods were holding out hopes of recovery to many who, in former years, would have been thought, by most observers, to be in the grasp of a hopeless disease. To Trudeau is the credit rightly given of having been the first in America to give practical proof of what can be done to lessen the ravages of consumption when, not long after Brehmer, he began his noble work in the Adirondack mountains. Gradually theories become facts, and the so-called fresh-air treatment began to be zealously adopted. This was a farther development of the ideas taught by Brehmer, and was chiefly the insistance of the necessity of absolutely fresh air for every moment of the twenty-four hours while the patient was under treatment. In later years it came to be shown that the same method could be successfully used not far from home; that surprising results could be obtained in a large percentage of cases at comparatively low altitudes and in what were formerly thought to be climates unfavorable for cure. Facing the popular cry that it was simply a fad that would sooner or later die down and disappear, to be placed with the forgotten histories of many so-called cures for consumption, this modern method has not only lived down this prejudice, but has given sufficient proof of its efficacy in large numbers of sufferers who, under other conditions, doubtless would have succumbed to the disease.

Within the last decade these ideas have taken a sudden and surprising hold upon the community, and have spread like a prairie fire in every direction throughout the country. Fortunately the simile holds in the rapidity of its growth only, for its effects are beneficial, not disastrous. With this rapidity of growth, however, come its attendant dangers from haste and ill-judged zeal. Those who have been preaching for years the doctrine of sanatorium treatment in properly selected cases, are obliged now to take a conservative position in order to counteract the extravagant statements of enthusiasts who, with too little knowledge, do harm to the cause by claiming too much. We have, as yet, no panacea for the treatment of consumption, although we are justified in the hope that we are on the eve of still greater advances than heretofore in this direction. We must remember, moreover, that no sane advocate of modern methods will ever claim that they are suitable for all classes of diseases. Fresh-air treatment pushed to an extreme with often marvelous results in cases in which the vitality can still resist the rigors of a northern winter, would be foolish and cruel for the far-advanced cases or in old people in whom vitality is low. Experience and judgment must be used in this as in every branch of medical or surgical science, otherwise disaster ensues. Disappointment, reaction of feeling, and condemnation follow quickly, and with them the pendulum swings far in the other direction, and great harm comes to a cause which, when judiciously advocated, can be of untold good to the human race. In this connection, the indiscriminate and hasty use of the word "cure" must be strongly condemned, for it only brings harm to the patient through the probability of relapse from disregard of watchfulness and care necessary for months after cessation of active symptoms. To others, also, it is apt to bring discouragement and distrust of methods which, fully understood, can, with time and patience, bring about lasting results.

Many thoughts and suggestions come to me as we touch on these matters, but it would be impossible within the scope of this paper to do more than suggest those which from experience I have learned to believe are most vital. With knowledge gained in over seven years as attending physician to the large State Sanatorium, at Rutland, Mass., from its incipiency up to a comparatively recent date, and recognizing the rapidly growing tendency of other states to follow the example of Massachusetts, I believe it will be well at this meeting of physicians and laymen to give briefly one or two words of caution to those who are urging the erection of similar institutions elsewhere. It is my firm conviction, which I have always held, that sanatoria, in the strict

* Address of the Chairman of the Clinical and Climatological Section of the National Association for the Study and Prevention of Tuberculosis at Washington, May, 1906.

sense of the word, should be built away from the neighborhood of cities and kept solely for the use of incipient cases or for those in whom the disease has not so far progressed as to preclude a life of usefulness again. Far-advanced cases should not be sent to such institutions, but for them hospitals of different construction should be made within easy access of large cities and towns to enable friends and relatives to visit the patients without entailing much loss of time or expense.

It is of vital importance, moreover, if the best and most lasting results are to be obtained, that sanatoria intended for patients who are still in vigorous bodily condition should not be so large as to render personal supervision almost an impossibility. In the watchful care necessary for each individual at a critical stage of the disease, when ignorance may be the cause of fatal errors in mode of life, lies the great virtue of this method of treating tuberculosis. Just so surely as we increase the proportion of patients to the number of medical assistants beyond certain limits, just so surely do we diminish the chances of proper supervision of individuals and thereby run great risk of not gaining favorable results for those under our care.

One fact I believe now to be of great importance if we would keep public sanatoria for the tuberculous above the level of mere boarding houses with medical attendants. I have already alluded to the extraordinary interest awakened throughout the world in the last decade by the favorable results of fresh-air treatment. This is a great step in advance and of great educational value; but we should now keep something higher before us lest we stagnate and merely content ourselves with watching a large percentage of patients leave our sanatoria with the disease in a state of arrest, ready to act as missionaries in the world to teach others the simple but essential laws of hygiene. We should aim now to make our state sanatoria centers of scientific research, where clinical observation can go hand in hand with laboratory investigation. That this is not utopian scheme for public institutions, is well illustrated in the Boston City Hospital, which, although under municipal control alone, not merely offers practical aid to thousands of sufferers from acute diseases, but has built up slowly a pathological and bacteriological department which is an honor to Boston, and the fame of which is now established in America and Europe.

With a great clinic like that now at Rutland there is an almost unrivalled opportunity not only for giving immediate aid to hundreds of sufferers from tuberculosis, but for establishing, by comparatively simple means, the nucleus for laboratory research, which shall have for its special object the study of methods for stamping out tuberculosis, or at least of so keeping it under control that the awful mortality from this disease may be reduced to a minimum.

In order to place our state sanatoria on such a basis, it is essential that those in control should be men and women of broad vision and that the policy of such institutions should be left to those whose special training fits them to be guides for scientific as well as practical work.

With the example before us of what Trudeau has accomplished in the study of tuberculosis in his laboratory at Saranac Lake, and with the great hope ahead of us that the disease may yet be conquered, I can conceive of no more inspiring ideal for state institutions, nor anything in which our individual communities could take greater pride than to make such an ideal a reality. That this can be done I firmly believe. It only remains for others who have similar beliefs, to use their influence to this end, and we may yet live to see our wishes accomplished.

Original Articles

THE HOSPITAL PROBLEM.

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The hospital as an increment in the advances of civilization is worthy of more serious attention than it has received. It is an example of the constant tendency in present social evolution to specialize our activities and standardize our services and public functions. Its growth is inherent in the gradual passage of man from a smaller, lower, simpler, less uniform and coherent family unit to a larger, higher, more complex and more uniform communal unit. Once the house contained and the household managed all the affairs of life; eating, clothing, sleeping, recreation, and the eventful ceremonials of marriage, birth and death. Now much of the preparation of food, almost all the production of clothing and furniture, a large part of the recreations of life, are outside of the household, and the affairs of the home are simplified, while the standard of life is raised and the mechanical efficiency of every trade and occupation is enormously increased. So complicated, technical and occasional a service as the care of the sick could not in the nature of things very long escape the spirit of concentration, specialization, and standardization. As a result we have the hospital as a factor in modern life—a factor increasing in its extent and intimacy with every phase of society, commerce, politics and war. This factor, the systematic and economical care of the sick, is far reaching and concerns every grade and station of life, but none more than the specialized surgeon. It is worth while then to look at the hospital as a modern economic and technical institution and consider its probable errors, dangers and abuses, that we may better adapt ourselves to the ethical and economic questions to which its rapid and sudden development finds us without precedent or custom to control.

From a purely economic and social point of view the hospital is as necessary as the bakeshop, the tailorshop and the theater. It supplies at a minimum expense, within the reach of all, the maximum of skill in the care of the sick and injured. Sicknesses are inevitable, though infrequent emergencies, in every household and in the life of every individual. It allows the standard of life in the community to rise everywhere, at least in the matter of medical services, to the maximum level. The manual tradesman at a moderate wage may have as prompt, effective, skillful and even luxurious medical and surgical services as the bloated bondholder or the munificently remunerated professional man. The heartrending sufferings of the afflicted poor in their narrow quarters, the revolting deformities and sickening diseases of the neglected, and the pitiable spectacles of the defective in our neighborhood or on our streets no longer disturb our over complacent sensitiveness. The sick and injured are quickly carried by our multifunctioned police department to the nearest hospital, our insane and epileptics are segregated from those of us who are accredited as of sound mind, and thus we are permitted to go serenely on in our chase for wealth without hearing the creak of the friction of civilization. At the same time it is cheap

The house may be smaller if the births, sicknesses and surgical operations are provided for in the hospital. The wages may therefore be reduced, and yet the standard of life remain the same, or even raised. From an economic point of view the hospital is a success. It is ready, quick and cheap. It is economy, therefore, for the employing class to build many hospitals at the expense of a few million rather than pay the wages necessary to keep their employés in equal decency in their confinements, sicknesses and surgical operations at home. Whether these hospitals are built as railway hospitals, as eleemosynary adjuncts of religious societies, or as monuments of national or racial pride, matters not either to the exploiting capitalist or to the suffering patient. The result is the same, a dimunition of waste, an economic gain, and an increase in technical efficiency, and a gradual rise in the standard of life.

The character of the hospital is determined by the motive of its management. In our country the founders of hospitals have been largely influenced by the miserable condition of the poor in confinement and sickness. Pity, charity, and so-called benevolence has been the foundation on which emergency and eleemosynary hospitals have been raised. Their prime function, therefore, has been to relieve suffering rather than to restore to health and usefulness. Hence the great lack in all our hospitals of those postoperative gymnastics and hydriatic methods which form so large a part of the treatment of the hospitals of Europe in which the working people receive not only ordinary medical and surgical attention, but such orthopedic and general development as fits them to go from the hospital gymnasium immediately to their trade, whatever that may be. The whole construction of the hospital, from the location and the architecture to the minutest detail of administration, is modified, contracted, or extended by the motive of its foundation, and by a certain *Zeitgeist* which no amount of reason, argument or evidence can perceptibly modify or change. The superficial observer who visits the amphitheaters and operating rooms of the German hospitals may see little difference between them and our own. It is in this protracted after treatment, the general service and the authority and responsibility of the surgical staff, that they surpass us. Our hospital trustees are supreme and our medical and surgical staff their underlings and servants. Each department, the engineering, the culinary, the nursing and the pharmaceutical, stands in the same relation to the administration as the medical staff. It is often impossible for the medical and surgical staffs of our hospitals, except by the most undignified diplomacy, to secure what seems to them and all of us, the most rational and economical conduct.

The management and influence of the hospital is of the greatest interest to the profession. In no other walk of life are the emoluments and honors of each individual so dependent as in ours, on the ability, integrity and character of its most favored members. The members of our hospital corps have most fortunate opportunities. They receive an unearned increment of selected cases for treatment, and bring honor and profit to the profession, as well as health to its patients, if these cases are treated with scrupulous care and unflinching fortitude and fidelity.

A position on a hospital staff in our country does not carry a salary with it, but it gives to the intendant an unearned increment of cases which furnish a sufficient remuneration in money and reputation. Often, indeed, the interest of the religious sect or solidarity by which the hospital is organized makes each member of that association or body far and near a cryer and a drummer for their hospital, and incidentally for the members of its staff, and many patients are diverted from their natuarl channels through the general local practitioner to the consultant or operator he might for professional reasons select, to the staff man of a sectarian hospital to which the patient's religion, nationality or race allies him. To have a fervid religious sect, with a substantial, numerous and loyal hierarchy behind his hospital to sanctify it with devotion and fill it with its devotees, and the rich material for its propaganda, is worth more to a physician and surgeon than six columns a week of the most skillful exploitation or of blatant advertising in three daily newspapers, to the prevention of which method of securing patients our societies and their code of ethics is so strenuously devoted. In many of our public hospitals the staff, however appointed, serves absolutely without salary, and in one such institution at least, such a staff has been willing to submit to a competitive examination conducted by the political authorities.

The medical profession as a whole has a reasonable claim on the hospitals for some return for the gratuitous medical and surgical service which they receive. The legal profession is well remunerated for many public services, both directly in the salaries and honors to the bench and in fees to advocates and attorneys, and indirectly through law libraries and court publications. The commercial world does not serve the hospital at a less rate than it does hotels or private families. For gratuitous medical service some hospitals render little or nothing to the profession of medicine. The wards are closed to medical instruction. The clinics are hedged about with troublesome and useless restrictions. The necropsical and laboratory equipment are hampered and limited, and worst of all the gratuitous medical staff bears an impersonal responsibility without adequate authority, and the odium of each failure is born by the general medical profession. Even in the semipublic pay hospitals the medical and surgical staff whose members have such advantage over other practitioners owe the profession as a whole a loyalty, gratitude and service which is too often forgotten. The material over which such favored medical men preside is the material of the whole profession and should be considered sacred. Too often is it made the basis of personal exploitation or selfish greed. Few members of our hospital corps publish commensurate contributions to medical literature. They receive an unearned increment of material which another might get by open advertising, and yet they render to the profession no adequate return. That notable exceptions can be brought to the readers' mind at once only proves the rule. Both hospital trustees and medical staffs are unmindful and neglectful of their ethical relations and duties to the medical profession.

The organized medical profession ought to control the appointment of the staff in public hospitals and influence the appointment of staffs in private institutions, both as a safeguard to the interests of patients and as an earnest to the honor of the profession. The celestial or Confucian written examination falls as short of securing a rational result as the scales and yardsticks do in selecting officers of the navy. It required the battle of the Sea of Japan to demonstrate the folly of the one, but it hardly seems necessary to follow the centuries of China's inert bureaucracy to recognize the inherent inefficiency of the other. Not only should the staff receive the recogni-

tion and endorsement or appointment of the profession, but the professional fees which the staff commands should be subject to such revisions as would prevent the abuses so apt to creep in. The commercial spirit among trades-people, and even some of their betters, is so strong on the verge of the grave that they hesitate little to rob the profession of an adequate remuneration by simulating penury, or at least by suppressing the facts. A position on a hospital staff should not be a private sinecure for the satisfaction of personal ambition or financial greed, but a professional trust, carrying with it local duties to the organized profession, as well as worldwide obligations to render the most skillful and conscientious service and publish the most carefully studied and conscientious observations and results. It is the duty of the staff to make the hospital the most serviceable to the patient, and at the same time the center of medical progress and educational and professional good feeling in the community.

The exploitation of a hospital for the personal ambition or aggrandizement of an overshadowing member of a staff, or the exploitation of a staff for the interests of a solidarity or society, is inconsistent with the best interests of our profession, the unfortunate patient, and society as a whole. In the former case we have seen patients brought together by a department of publicity and promotion, examined and brought to the operating room through a method and by a machine patterned after the prevailing method and business machinery of a factory or department store, operated on by a rigidly systematized operative technic, taken to their rooms and nursed to convalescence according to a printed and inflexible after treatment. Such a mail order hospital does business and does it well on a standardized material, but unfortunately the material is not subject to standardization, and the machine which works perfectly well on ten cases fails to extrude the eleventh as a good machine should do, or turn it over to the "custom surgeon" as a sort of "made to order" or "special job." Even so simple a specialty as herniotomy can not be undertaken by a surgical machine and carried to unerring success. The man is more than his hernia and presents a problem greater than all the technical possibilities of a herniotomy. It is not the hernia that requires professional consideration and treatment. Herniotomy might become as systematized and technical as the morning shave or the Turkish bath, but the great army of hernia bearing men will each present a problem of illimitable possibilities and interests and will always require the most considerate, leisurely and personal investigation.

Each patient is always and in an overshadowing sense a man, and when he is sick he presents all the possibilities of disease. The only rational treatment that he can receive must come from the physician who is on his side more a man than a doctor, and more a doctor than a surgeon or other specialist. The higher the mountain peak of special professional excellence the greater, broader and more massive the plateau of general medical skill and human character on which it must necessarily depend. Under no circumstances can the care of the patient be divided up between several independent and unrelated physicians, whatever their special excellence or skill may be. The primitive relation is the only safe one, a sick man on the one side, a conscientious doctor on the other.

When the industrial revolution of the seventeenth century began it found Europe peopled with independent tradesmen, surrounded by their intimate and friendly customers, and possessed of all the tools, buildings and material necessary to the practice of their art. Now we find the homeless, tool-less dependent machine operators far removed from the people who furnish a market for the standardized product of their toil. The hospital is essentially a part of the armamentarium of medicine. The independence and the honorable position of medicine rests on the full control of its tools. If we wish to escape the thralldom of commercialism, if we wish to avoid the fate of the tool-less wage worker, we must control the hospital.

THE PATHOGENIC BACTERIA OF THE CONJUNCTIVA.*

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Our knowledge of the micro-organisms which produce pathologic conditions on the human conjunctiva, of their occurrence in various sections of the world and of the conditions necessary for their growth is becoming gradually more exact, although many points are still in dispute and await further accumulation of facts.

We know definitely that the same form of inflammation of the conjunctiva can be produced by various organisms. Examination of acute catarrhs, as well as of the purulent and pseudo-membranous forms of conjunctivitis, shows that cases which are clinically indistinguishable may contain bacteria that are morphologically very different. It is further definitely proven that one organism may produce various types of conjunctivitis, according to the conditions present and to the virulence of the organism, and that certain forms may exist in the conjunctiva at times without causing any reaction. Much, therefore, depends on the individual constitution or predisposition of the person affected and the conditions present in the conjunctival sac at the time of infection.

We recognize, moreover, that certain micro-organisms are more independent of these conditions than others, and that the earlier division of the bacteria into those which are "conditionally contagious," such as staphylococci, streptococci, pneumococci and diphtheria bacilli, and those which are "unconditionally contagious," such as the Koch-Weeks bacillus, the diplobacillus of Morax and Axenfeld and the gonococcus must be still considered as practically correct, despite the occasional occurrence of the last named organisms (with the possible exception of the Koch-Weeks bacillus) on the normal conjunctiva. The special conditions which favor the growth of the various organisms have been developed in a series of valuable papers by Uhthoff,[1] Sourdille,[2] Lagrange,[3] Wolkowitsch,[4] Cramer,[5] Lobanow[6] and Römer,[7] which have been critically reviewed by Professor Axenfeld.[8]

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* Read in the Section on Ophthalmology of the American Medical Association, at the Fifty-seventh Annual Session, June, 1900.

1. Uhthoff: "Bakteriologische Untersuchungen bei Diphtherie d. Bindehaut," Wiener Naturforscherversammlung, 1894.
2. Sourdille: Arch. d'Ophtal., vol. xiv, January, 1894.
3. Lagrange: Ann. d' Oculistique, vol. cxxi, p. 128.
4. Wolkowitsch: "Versuche über die Bedingungen der Infektion der Conjunctiva," Diss., St. Petersburg, 1899.
5. Cramer: Centbl. f. Gyn. No. 9, 1899.
6. Lobanow: Westnik ophth., vol xvi, p. 560, 1899; also vol. xv, pp. 3 and 215.
7. Römer: Zeits. f. Hygiene, vol. xxxii, No. 2, 1899.
8. Axenfeld: Lubarsch and Ostertag's Ergebn. d. Allg. Path. u. path Anat. d. Mens., 1899.

METHODS OF INFECTION.

It is to another phase of the subject, however, that I desire to call attention, viz., the method of conveyance of the contagion.

Direct Contact.—It is no doubt true that the method of direct contact, of conveyance of the secretion containing the specific micro-organism from the eyes of the affected individual by means of fingers, towels, handkerchiefs, washing utensils, etc., must still be considered as the one which obtains in the majority of cases. That this, however, is the only way, as has long been taught, is open to doubt.

Dust Infection.—The spread of acute contagious conjunctivitis in schools and asylums, despite careful precautionary methods adopted by those in charge, and in an epidemic form in places where the individuals do not come in close contact, raises the question of whether infection can or can not be transmitted by the air. On this subject a great deal of experimental work has been done, particularly in the German laboratories and also in this country.

The important work of Flügge,[9] published in 1897, proved conclusively that the contagious diseases can be so carried, and that bacteria mixed with dust remain flying in the air for hours, and that very slow currents of air are capable of spreading the ordinary room-dust throughout a room and into adjoining chambers. He showed that the requisite condition for the transmission of organisms in the air was their ability to withstand drying, and as the result of his experiments and those of investigators working along the same lines, notably Neisser,[10] Laschtschenko,[11] Germano[12] and others, bacteria have been divided into separate classes.

The first group contains the cholera, plague and typhoid organisms, which die rapidly in the dust, and so under natural conditions are probably not carried through the air. In this class are probably to be placed the influenza bacillus and gonococcus.

A second group includes streptococci, pneumococci and diphtheria bacilli, which resist drying for from three to six months, especially in secretion, although some forms of the pneumococcus are as susceptible as the cholera bacillus.

In a third group are the *Diplococcus intracellularis*, the cause of epidemic cerebrospinal meningitis, which possesses extremely high resisting power to drying, *Staphylococcus pyogenes* and the tubercle bacillus.

In a fourth group might be placed the spore-forming organisms, such as anthrax and tetanus, which have an almost unlimited vitality in a dried condition (Germano[12]).

Droplet Infection.—In addition to this method of dust infection we are indebted to Flügge and his assistants for the discovery of a second method of contagion, which is of almost equal importance, viz., by means of fine drops. It has been shown that by an ordinary spray apparatus a solution containing prodigiosus culture may be atomized and the drops will be carried to all parts of a room and remain suspended in the air for from two to five hours. The method is of especial importance in connection with diseases which are accompanied by coughing and spitting; Flügge's experiments proved that every cough, sneeze or outcry sends fine drops of sputum in large number into the air and that these droplets may likewise remain flying in the air for hours. This method for the spread of pulmonary tuberculosis was recognized as early as 1884 by Koch, and was fully demonstrated by Laschtschenko[11] in Flügge's laboratory and by Curry[13] in this country, while Goldie[14] and Boston[15] have shown that in ordinary talking consumptives expel droplets which can be caught on a glass plate held in front of the mouth, and that these drops can be shown to contain tubercle bacilli.

For these diseases of the respiratory organs, therefore, the causes of which do not retain their vitality after drying, and can not exist in the air, in the form of dust, the inhalation of atomized drops is doubtless a frequent and dangerous way of infection, ranking with contact, especially for persons who are only visitors to the patient and are not nursing or washing utensils, linen, etc. (Flügge).

The importance of this matter in connection with the diseases of the eye, while hitherto but little considered, must be appreciated.

In all forms of catarrhal conjunctivitis which are associated with well-marked secretion, the organisms may be carried downward through the lachrymonasal duct into the nose and throat and from there be expelled in the acts of talking, sneezing and coughing. Lobanoff's[16] article was a valuable contribution to the subject. He reported a case in which diplobacilli were present on a sore spot at the angle of the mouth for a long while. Biard[17] found diplobacilli in the nose in twenty-eight out of thirty cases examined, even in the absence of conjunctivitis, although the correctness of his results has been disputed by Morax and Petit[18] and by Zur Nedden.[19] Erdmann[20] in 1905 found an organism corresponding exactly to the Morax-Axenfeld bacillus in the nose in forty-two out of sixty-seven cases of diplobacillus conjunctivitis. For the pneumococcus and Koch-Weeks bacillus this infection of the nose as a result of the well-marked conjunctival secretion is especially to be considered.

Pneumococcus rhinitis and bronchitis are often associated with pneumococcus conjunctivitis, and as the spread of pneumonia and influenza must be accounted for at times by the occurrence of drop infection, so the possibility of this drop infection in contagious diseases of the conjunctiva must always be thought of, particularly in schools. The spread by dust infection is of less importance, as the special bacteria of the eye are but slightly resistant to drying. The carrying of the secretion by flies must also be a factor of importance, particularly in regions such as Egypt, where there is a lack of the ordinary hygienic precautions and care in cleanliness, and even in hospital and infirmary wards unless patients are screened. It is important, moreover, to recognize that the organisms are much more resistant to drying when they are protected by the secretion than when in pure culture, and many retain their virulence as long as they remain moist. Further experiments along these lines, such as were conducted by Erdmann[20] for the diplobacillus, should prove of value in making our knowledge of the transmission of the contagion more definite.

9. Flügge: "Ueber Luftinfection." Zeits. f. Hyg. u. Inf., vol. xxv, 1897.
10. Neisser: "Ueber Luftstaubinfection." Thesis, 1898.
11. Laschtschenko: Deuts. med. Wochft., 1898, p. 134.
12. Germano: Zeits. f. Hyg. u. Inf., vols. xxiv, xxv, xxvi, 1897.
13. Curry: Boston Med. and Surg. Jour., Oct. 13, 1898.
14. Goldie: Canadian Pract. and Rev., August, 1899.
15. Boston: THE JOURNAL A. M. A., Sept. 14, 1901.
16. Lobanoff: "Ueber die Bedeutung der Luftinfektion für des Auge," Arch. f. Ophth., vol. li, p. 431, 1900.
17. Biard: "Etude sur la Conjunctivite subaigue," Thèse de Paris, 1897.
18. Morax and Petit: Ann. d'Oculist., vol. cxx, p. 161.
19. zur Nedden: Klin. Monats. f. Augenhk., January, 1902.
20. Erdmann: Klin. Monatsbl. f. Augenhk., vol. xliii, May, 1905.

BACTERIA ENUMERATED AND DESCRIBED.

The morphology, staining and cultural peculiarities of the individual organisms which are pathogenic for the conjunctiva are now fairly well determined, and in considering the bacteria I shall place particular stress on the facts which have been determined concerning the resistance of the cultures, the probable methods of conveyance of the infection and the conditions necessary for their growth in the conjunctiva. As the bacilli of tuberculosis and leprosy have been discussed in another paper in connection with the pathogenic bacteria of the lids, they will be omitted here.

1. *The Koch-Weeks Bacillus.*—This minute organism, first discovered by Koch,[21], and later more carefully studied by Weeks,[22] Kartulis,[23] Morax,[24] Weichselbaum and Müller[25] and Hofmann,[26] is 0.25 micron wide and from 0.5 to 1 micron, more rarely 2 microns, long. The shorter forms are often found in pairs; their ends are rounded and there is occasionally a polar staining. The bacillus is decolorized by Gram's method and is best stained with dilute carbol-fuchsin and watery solution of gentian violet, but does not stain so deeply as the ordinary pus cocci.

In the secretion it is found both in and between the pus cells and is often associated with the xerosis bacillus, occasionally with isolated cocci, which are liable to conceal it in the culture media. It is obtained in pure culture with considerable difficulty. Of the ordinary media only very moist dilute 0.5 per cent. peptone agar of not too great alkalinity is available, and only when the organism possesses full virulence. Ordinarily it requires special media, of which the best are serum agar and serum bouillon. The presence of xerosis bacilli or staphylococci in the culture favors its growth (Rymowitsch[27]). The colonies appear at the end of from twenty-four to forty-eight hours as round, transparent, glistening drops, which resemble those of the influenza bacillus. In serum bouillon a delicate diffuse opacity is formed, which sinks to the bottom of the tube. In cultures the organisms show long involution forms and are non-motile.

They lose their vitality rapidly, and after five days can usually not be reinoculated. They are readily killed by heat, a temperature of 60 C. destroying them within fifteen minutes. The experiments of Weichselbaum and Müller[28] showed that after drying the secretion in Petri dishes for six and one-half hours the organisms could not be cultivated, and after eight hours they were unable to infect the human conjunctiva. Hofmann likewise found that the bacilli lost their vitality after exposure to drying for three hours at a temperature of 20 C. They are, therefore, but little resistant to drying and can probably not be carried by the dust.

On the other hand, in the presence of abundant secretion they may be readily carried into the nose and communicated by Flügge's drop method or be carried by flies. Water may serve for a short time as a carrier of infection, but infection by direct contact is probably the most frequent method.

The bacilli are unconditionally contagious for the human conjunctiva, all inoculations of the pure culture proving successful, and an immunity after one attack is rarely found. Culturally and morphologically they resemble closely the influenza bacillus and the bacillus described by L. Müller[28] as the cause of trachoma. The latter is now held by the best authorities to be probably an accidental infection, and perhaps a modification of the Koch-Weeks bacillus, which in its turn is closely allied to the influenza organism. The influenza bacillus is also capable of producing a well-marked catarrhal conjunctivitis, which is usually associated with catarrhal conditions of the air passages during epidemics of influenza (zur Nedden,[29] Jundell[30]).

Jundell claims that the Koch-Weeks and influenza bacilli are identical, but Morax,[24] zur Nedden[29] and others who have most carefully studied them, consider that their cultural peculiarities are sufficient to distinguish them, although on a smear they are difficult to differentiate. Like the Koch-Weeks bacillus, the influenza bacillus is very sensitive to drying (Kruse[31]), but the rapid spread of epidemics can hardly be explained unless we accept the drop infection of the air during the coughing and sneezing paroxysms of the affected persons.

2. *Morax-Axenfeld Diplobacillus.*—This was discovered independently by Morax[32] and Axenfeld[33] in 1896, and is now recognized as a widespread and frequent cause of a form of conjunctivitis which is usually subacute, but at times is acute and occasionally complicated with severe ulcerative processes on the cornea. It occurs in large numbers in the secretion, as a large bacillus 1 micron broad and 2 microns long, with rounded ends. The individuals are found in pairs, end to end, sometimes also in chains. It stains readily with ordinary anilin dyes, and is completely decolorized by Gram. Special staining methods have shown that a capsule is probably present, although it is usually invisible by ordinary methods, in contradistinction to the Friedlander's pneumonia bacillus and the ozena bacillus, with which it has often been confused, probably, in examination of the nasal secretion. It can not be cultivated except in the incubator, and usually only on blood serum or serum agar. Blood serum is gradually liquefied, and the media must be alkaline in reaction.

On the conjunctiva the bacilli are present ordinarily in pure culture, sometimes mixed, however, with pneumococci, streptococci or Koch-Weeks bacilli (Hofmann[34]). In culture they are non-motile, obligate aërobes and rapidly show involution forms. They are non-pathogenic for animals, but unconditionally so for human beings. As they are very sensitive to drying and low temperature, they probably can not be carried by the dust, but they have been demonstrated frequently in the nose (Biard,[17] Erdmann,[20] Axenfeld), and the drop infection must be accepted for them. Erdmann's experiments showed that the organisms retained their vitality after drying of the conjunctival secretion on small linen squares, at room temperature, for fourteen

21. Koch: Arbeiten aus dem Kaiserlichen Gesundheitsamt, vol. iii, p. 19.
22. Weeks: Arch. f. Augenhk., vol. xvii, p. 318, 1887.
23. Kartulis: Centbl. f. Bakt., vol. i, 1883.
24. Morax: "Sur l'etiologie des Conjunctivites aiguës." Thèse de Paris, 1894; Ann. d'Oculist., vol. cxxix, 1903, p. 156.
25. Weichselbaum and Müller: Arch. f. Ophth., vol. xlvii, p. 108, 1899.
26. Hofmann: Zeits. f. Hyg. u. Inf., vol. xxv, 1897; Centbl. f. Bakt., vol. xxviii, p. 353, 1898.
27. Rymowitsch: Wratsch., vol. xx, p. 638, 1900 and 1901.
28. Müller: Arch. f. Augenhk., vol. xl, p. 13, 1900.
29. zur Nedden: Klin. Monats. f. Augenhk., vol. xxxviii, p. 173, January, 1900; also vol. xli, March, 1903.
30. Jundell: Mitteilungen aus der Augenklinik des Carolinischen med. Chirurg. Instituts, Stockholm, vol. iii, p. 11, 1902.
31. Kruse: "Die Mikroörganismen," etc., Flügge. Chapter on Bacilli, vol. ii, p. 435.
32. Morax: Ann. de l'Inst., Pasteur, June, 1896; also Ann. d'Oculist., January, 1897.
33. Axenfeld: Heidelberger Kongress, 1896, Centbl. f. Bakt., vol. xxi, No. 1, 1897; also Berl. klin., Wochft., 1897, p. 847.
34. Hofmann: Archiv. f. Ophth., vol xlviii, p. 639, 1899.

days, and that they could produce conjunctivitis after fifty-four hours, so that infection by means of handkerchiefs and towels must be of frequent occurrence, especially in house epidemics.

3. *The Pneumococcus (Fränkel-Weichselbaum)*, or *Diplococcus Lanceolatus.*—This is now recognized as one of the most common causes of acute conjunctivitis. It is occasionally found on the normal conjunctiva, but not so commonly as Gasparini[35] first claimed (80 per cent.). It is only conditionally contagious, some predisposition being required on the patient's side, despite the occasional occurrence of pneumococcus conjunctivitis in epidemic form. It is a frequent cause of conjunctivitis of the new-born, in whom it often causes a blennorrhea, which, however, is not so severe as the gonorrheal form. It has been found occasionally in croupous and diphtheritic pseudo-membranes, alone and mixed with other organisms. On cover glass preparations the diplococci occur in pairs, the individuals being lanceolate in shape, with the flattened ends opposed; chains of four or five members are also found. They are less likely to show capsules in the conjunctival secretion than in sputum and blood. They stain readily and are not decolorized by Gram (being thus differentiated from the meningococcus). They are best cultivated on alkaline media-agar, blood-serum, or blood-agar—at incubator temperature, the colonies appearing as small, transparent, isolated points. The individuals show no capsules in culture, tend to form chains (showing their close relationship to the streptococcus family), and soon lose their virulence.

There is a great variation in pathogenicity between the different types, some being less resistant to drying and exposure than cholera (Germano[12]), while others retain their virulence in a dried state, particularly in secretion, for months. It is especially for this organism that the air infection must be considered, particularly in schools and dormitories (it is the almost constant find among the students in the University of Pennsylvania who develop conjunctivitis), as the organism is so constantly found in the nose and throat, and pneumococcus conjunctivitis is usually associated with rhinitis.

The condition may also arise in an autoinfection, as the diplococcus is a constant parasite in man, either (as in pneumonia,) by increasing the virulence of the organism, or by lowering of the general resistance of the individual, or by local injury to the conjunctival epithelium.

4. *The Gonococcus (Neisser)*.—This is the cause of gonorrheal conjunctivitis of the adult, and of about 70 per cent. of the cases of ophthalmia neonatorum, the latter being caused also by the Koch-Weeks bacillus, pneumococcus, colon bacillus, influenza bacillus and virulent streptococci and staphylococci, though usually in a less severe form. The organism is biscuit-shaped, occurs usually in pairs between the pus cells, or more often grouped in larger numbers around the nuclei within the cells. It stains readily with anilin dyes, is decolorized by Gram (which differentiates it from the pneumococcus), and is cultivated with some difficulty. The best media are human blood-serum, serum-agar, or a mixture of human blood-serum and bouillon, at temperatures of from 32 to 34 C. The colonies are small, irregular, transparent discs, and the organism rapidly shows involution forms, and usually dies by the ninth day unless reinoculated. It is differentiated from the meningococcus and the pseudogonococcus, described first by Krukenberg[36] by the fact that the latter grow readily on ordinary media. The comparative rarity of these organisms in conjunctivitis makes a confusion with them in the study of a smear probably infrequent, but in case of doubt a culture should be made.

The gonococcus is very slightly resistant to drying or dilution with water, losing its activity in dried secretion after thirty-six hours. It can therefore be transmitted directly, or by soiled articles, or may be carried by flies, as it retains its vitality, according to Welander,[37] as long as the secretion remains moist. It is very contagious but as unilateral cases are not infrequent, and the number of infections of the conjunctiva in adults is small in proportion to the urethral infections, and as Kalt[38] has reported a case in which inoculation of a trachomatous child was unsuccessful, we must consider it less unconditionally contagious than was at one time thought. It may be that the organisms in these cases lose their virulence by dilution or drying in the transfer, or that they are mechanically removed by the tears, or perhaps a certain immunity is established in those who have urethritis.

The gonococcus penetrates rapidly between the cells of the conjunctival epithelium and produces an intense inflammatory reaction. Cases of metastatic infection of the joints have been reported, especially in new-born children.

5. *Diphtheria Bacillus (Klebs-Löffler)*.—This organism may be present in the normal conjunctiva, as in the normal pharynx, and is the cause of membranous conjunctivitis, both of the milder croupous and the deeper necrotic form. In the latter it is often associated with staphylococci and streptococci. Pseudomembranes can also be formed by the Koch-Weeks bacillus, by pneumococci, gonococci, staphylococci, streptococci, and more rarely by the meningococcus, Friedländer's pneumobacillus and colon bacillus. These are usually mild forms, but severe necrotic cases have also been reported, in the absence of the Klebs-Löffler bacillus.

It is only moderately contagious to the conjunctiva, requiring certain conditions, especially injury or previous conjunctivitis, and the intensity of the reaction is dependent both on the virulence of the variety and on the resistance of the patient's tissues. It is often found in association with impetigo of the face, and it is quite possible for severe pharyngeal diphtheria to develop from a comparatively mild case of diphtheritic conjunctivitis.

The bacillus is a long rod, straight or curved, one or both ends being clubbed, and staining more deeply than the central segments. No spores are formed. It stains with anilin dyes, is positive to Gram, and grows well on ordinary agar and bouillon, but best on Löffler's blood-serum and serum-agar, in the form of flat, grayish colonies. Involution forms are common.

It must be distinguished from the xerosis bacillus, which is morphologically very similar to it, and as the different types vary greatly in cultures, many authorities consider its virulence to animals the only sure method of differentiation. In the majority of cases, however, Neisser's stain (acetic acid methylene blue for from one to three seconds, followed by Bismarck brown from three to five seconds), applied to the organisms grown on

35. Gasparini: Ann. d'Ottalm., vol. xxii, No. 6, 1893.

36. Krukenberg: Klin. Monats. f. Augenhk., vol. xxxvii, p. 271, 1899; also vol. xxxix, p. 604, 1901.

37. Welander: Wien. klin. Rundsch., No. 52, 1896.

38. Kalt: Soc. de Biol. Séance, Dec. 7, 1895: Ref. in Ann. d'Oculist., vol. cxv., p. 161.

Löffler's blood-serum at 35 C., after from ten to twenty-two hours, shows blue polar staining in the diphtheria bacillus, in contrast to the general brown stain on the rest of the organism. The xerosis bacillus does not show this characteristic staining, or else much later. In alkalin bouillon the diphtheria bacillus produces an acid reaction, the xerosis bacillus never.

According to Arnold Knapp,[39] the diphtheria bacillus causes a media containing dextrin to turn red and to coagulate, while saccharose is unchanged; whereas, the xerosis bacillus produces fermentation with acid production in saccharose, while dextrin remains unaltered.

Identical with the xerosis bacillus is probably also Gelpcke's[40] *Bacillus septatus*, which he described as the cause of "Schwellungskatarrh." The diphtheria bacillus is one of the most resistant to drying (up to six months), and can be carried by the dust, provided the air current be sufficiently strong (Germano[42]). It may be readily transmitted by drop infection.

6. *Staphylococci.*—These are found frequently on the normal conjunctiva; they are present alone in virulent form in some of the non-gonorrheal forms of conjunctivitis neonatorum, and in pseudomembranous conjunctivitis, either alone or in association with streptococci and diphtheria bacilli.

According to Gonin,[41] they may be considered as the cause of these conditions if present in large numbers and in a virulent form. Ordinarily they are not pathogenic for the conjunctiva, however, and do not produce epidemics. All attempts at inoculation in the human conjunctiva so far have failed. They probably have no causal relationship with phlyctenular conjunctivitis.

The only variety which can be considered pathogenic is the *S. pyogenes aureus*, which is a spherical coccus, found in clusters in the secretion, which stains deeply by ordinary dyes, and is positive to Gram. It grows at room temperature and in the incubator, on all ordinary media, producing abundant yellowish colonies, and liquefies gelatin. It produces an acid reaction in the various media and coagulates milk. It has great vitality, withstanding drying for months, and may be readily carried by dust, thus infecting the air. Römer[42] succeeded in inoculating rabbit's conjunctiva with it, after irritating the membrane with dust or sand. Poulard[43] has recently described 8 cases of acute staphylococcus conjunctivitis following hordeolum, in which the pre-auricular glands were swollen and tender.

7. *Streptococci.*—As already stated, streptococcus is the cause of pseudomembranous conjunctivitis, either alone or with the diphtheria bacillus, but is relatively most often described in lacrimal conjunctivitis, in association with dacryocystitis (Parinaud's conjunctivitis). In this there is frequently iritis, without involvement of the cornea, swelling and tenderness of the pre-auricular glands, and some fever.

It has been found rarely on the normal conjunctiva; epidemics of streptococcus conjunctivitis have never been reported, although observations of Vossius[44] would indicate that contact infection is possible. In any case it is only very slightly contagious, except in the presence of injury to the conjunctiva.

The organism is slightly smaller than the staphylococcus, and is found in chains of varying length. It stains with the basic anilin dyes, and is positive to Gram. It grows on ordinary culture media, but less vigorously than staphylococcus and forms small transparent colonies, which remain colorless, and do not tend to coalesce. Gelatin is not liquefied. Like staphylococcus, it is very resistant to drying and can readily infect the air.

Bacterium coli commune, *Bacillus pyocyaneus*, and Friedländer's *Bacillus pneumoniæ* have been occasionally reported on conjunctivitis, but are not of sufficient importance to require detailed mention in the present résumé. The influenza bacillus and Müller's trachoma bacillus have been referred to in connection with the Koch-Weeks bacillus. *Meningococcus intracellularis* has been reported several times, and its differentiation from the gonococcus and pneumococcus has been given above, but our knowledge of the organism is still too uncertain to be positive about its pathogenicity. Raehlmann[45] has reported ultramicroscopic organisms in connection with his studies of trachoma, but these results, with his discoveries of similar ultramicroscopic bacteria in sympathetic ophthalmia,[46] require confirmation. We must still consider the organism of trachoma as undiscovered.[47]

39. Knapp: Trans. Amer. Ophth. Soc., vol. x, No. 2, p. 283.
40. Gelpcke: "Bacillus septatus," Karlsruhe, 1898.
41. Gonin: Revue méd. de la Suisse Romande, February and March, 1899.
42. Römer: Zeits. f. Hyg., vol. xxxii, No. 2.
43. Poulard: Arch. d'Ophtal, October, 1905.
44. Vossius: Deuts. Praxis, vol. iii, No. 22, 1901.
45. Raehlmann: Beitr. z. Augenhk., vol. lxii, No. 1, 1905.
46. Raehlmann: Deuts. med. Wochft., No. 13, 1904.
47. The complete bibliography will be found in Axenfeld's articles in Lubarsch and Ostertag's "Ergebn. d. path. Anat.," 1894-1900; in Kolle and Wassermann's "Handbuch der Pathogenischen Mikroörganismen," Jena, 1903, article "Spezielle Bakteriologie des Auges," by Axenfeld, and in Saemisch's chapter "Die Krankheiten der Conjunction," in the Graefe-Saemisch Handbuch der Gesamten Augenheilkunde, Leipzig, 1904, vol. v, part 2, div. 1, chapter 4.

THE PATHOGENIC BACTERIA OF THE EYEBALL.*

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This article is not intended to be exhaustive, but is designed to call attention to what has been done in this field as it affects the eyeball.

MICRO-ORGANISMS AFFECTING THE CORNEA.

The micro-organisms that affect the cornea are:

Bacterium coli commune.	Bacillus tuberculosis.
Bacillus Koch-Weeks.	Gonococcus.
Bacillus Kruger.	Pneumococcus.
Bacillus Klebs Loeffler.	Staphylococcus.
Bacillus of Petit.	Streptococcus pyogenes.
Bacillus of leprosy.	Penicillium glaucum.
Bacillus Morax-Axenfeld.	Aspergillus fumigatus.
Bacillus perfringens.	Aspergillus flavescens.
Bacillus pyocyaneus.	Aspergillus glaucus.
Bacillus ulceris cornea (Zur Nedden).	Aspergillus nigricans.
	Saccharomyces.

Bacillus Coli Communis.—De Bernardinis[1] reports a case of ulcer of the cornea with hypopyon due to this micro-organism. The patient, a male, aged 35, was struck in the eye with a whip three days before he appeared at the clinic. There was a large ulcer of the cornea with hypopyon, which went on to perforation. Exenteration of the globe was performed by Professor da Vincentiis on the sixth day after the accident. A careful bacteriologic study was made and the colon bacillus was found to be the pathogenic agent.

Randolph[2] reports a case of panophthalmitis due to the colon bacillus. The patient, a male, aged 6, was struck in the eye with a piece of wire. He was seen twenty-four hours after the injury. There was a perforating wound extending across the lower part of the cornea, accompanied by intense pericorneal injection.

* Read in the Section on Ophthalmology of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.

1. Ann. di ottal., vol. xxxiii, p. 5.
2. Amer. Jour. Med. Sciences, 1893, p. 440.

The inflammatory condition advanced rapidly and on the fifth day the eye was enucleated. Bacteriologic examination disclosed the presence of the bacterium coli.

In the few cases reported in which panophthalmitis was produced by the colon bacillus the bacilli gained entrance through a wound and the progress of the affection was very rapid.

Koch-Weeks Bacillus.—Ulcer of the cornea due to this micro-organism is extremely rare, but does occur. It is most common in adults. Children are seldom affected. As a rule it accompanies a severe case of conjunctivitis due to this bacillus and is secondary to the conjunctivitis, but the conjunctivitis may be of a moderately severe type. The ulcer may continue to increase in size after the acute stage of the conjunctivitis has subsided. Morax[3] was the first to describe ulcer of the cornea due to this cause. The ulcer develops in from five to seven days after the onset of the acute conjunctivitis. At first there is a small area of infiltration two or three millimeters in diameter, usually near the limbus. The epithelium and superficial layers become necrotic and a superficial ulcer, nearly circular, with sloping edges and a grayish base, develops. The surrounding corneal tissue is slightly infiltrated with small cells. Iritis and hypopyon as complications are very rare. The diagnosis can be made with certainty only by microscopic examination. Scrapings from the ulcer will show the small bacillus when they are properly stained.

Prognosis: Under proper treatment recovery almost invariably results without great injury to the cornea.

Unnamed Bacillus Described by Kruger.—Although it is conceded that the undermined or "serpent" ulcer is produced in the greater number of cases by the pneumococcus, other micro-organisms are also found in some cases which apparently are the causative agents. Kruger[4] describes a straight bacillus with rounded ends, measuring from 0.75 to 1.3 microns in thickness and from 1.75 to 4.5 microns in length, which he obtained from the scrapings in "serpent" ulcer, which caused marked infiltration when injected into the corneal tissue of the rabbit. Serpent ulcer may be produced by the *Staphylococcus pyogenes aureus* and by the streptococcus.[5]

Klebs-Loeffler Bacillus.—The affection of the cornea brought about by this micro-organism is probably always secondary to diphtheritic conjunctivitis, although the question of primary ulcer of the cornea due to the Klebs-Loeffler bacillus has been raised by some observers. It has been shown by experiments[6] that the toxin of the Klebs-Loeffler bacillus is the potent factor in reducing the vitality of the cornea; that the first evidence of a necrotic process is an opalescence or blanching of the cornea, which is followed by a roughness of the surface at some point or over the entire cornea and then a loss of substance. A slight traumatism favors rapid development of the ulcer. It appears that the streptococcus soon finds entrance and is active in the production of the extensive loss of substance. In a case referred to by Petit[7] the Klebs-Loeffler bacillus was recovered from the conjunctival secretions and the streptococcus from the floor of the ulcer. If mixed infection is common we must conclude that the diphtheria antitoxin has a favorable effect on processes in which the streptococcus is present with the Klebs-Loeffler bacillus, as it is found that the corneal lesion, as well as the conjunctival process, is favorably influenced by hypodermic injections of antitoxin. However, if the streptococci predominate the influence of the antitoxin is almost nullified[8] and the lesion of the cornea advances. Not only does the streptococcus appear to thrive in the presence of the Klebs-Loeffler bacillus, but the staphylococcus is also found in company with that micro-organism in diphtheria of the conjunctiva.

Petit[7] has observed and cultivated a bacillus which he terms the *Diplobacille liquefiant,* which bears some resemblance to the diplobacilius of Morax and Axenfeld. It is smaller, however, and when cultivated in coagulated blood serum causes a much greater liquefaction than is produced by the Morax-Axenfeld diplobacillus. The corneal lesion may be superficial; it may also be deep, with undermined edges. Iritis and hypopyon may develop. Petit reports three cases. A characteristic of the ulcer which he emphasizes is the absence of pain and photophobia so long as the ulcer remains superficial. With the development of hypopyon and iritis pain becomes a prominent symptom.

Leprosy Bacillus.—The cornea is frequently invaded by the leprosy bacillus in patients suffering from that disease, the invasion resulting in a sclerosing process in some cases, destruction of the corneal tissue occurring in others. The cornea is always secondarily attacked. There are a number of forms of invasion: (a) Superficial punctate keratitis, characterized by the appearance of small grayish nodules at the margin of the cornea, just beneath the epithelium, accompanied by some infiltration of the adjacent cornea. The nodules spread toward the center. They contain aggregations of lepra bacilli, which are also found in the lymph spaces of the corneal tissue.[9] (b) Deep parenchymatous keratitis, "which is always secondary to anterior uveitis." The infiltration does not tend to clear up and the cornea in the affected part becomes thinner (sclerosed). (c) Leprous nodules (lepromata) develop from the limbus. They do not involve the cornea very deeply and may be confined to the limbus or may cover the entire cornea. They are slightly vascular and may ulcerate at their apices, but this does not often happen. Numerous bacilli are found in the tissues of these nodules and are present in the corneal tissue immediately adjoining. A peculiarity of the invasion by lepra bacilli is the almost entire absence of pain.

Bacillus of Morax-Axenfeld (Diplobacillus).—Ulcer of the cornea from the diplobacilli has been observed by many ophthalmologists. The papers by Paul,[10] Erdmann[11] and Stoewar[12] are among the latest. In northern Germany ulcer of the cornea from this cause is relatively common. Of 342 cases of diplobacillus conjunctivitis observed in the University eye clinic of Rostock thirty were complicated by corneal ulcer of greater or less severity. The percentage of corneal ulcer caused by the diplobacillus as reported by Paul is 30 per cent., Stoewar 34 per cent. It is probable that this percentage will not hold in other parts of the world.

The character of the ulcer caused by the diplobacillus varies greatly. It may be a shallow marginal ulcer, central or nearly central and shallow, or deep and exhibiting a tendency to spread, and may be accompanied by

3. "Recherches bacteriologiques sur l'etiologie des conjunctivities aigue." Thèse de Paris, 1894.
4. Zeits. f. Augen., vol. ix, p. 192.
5. Uhthoff and Axenfeld: Graefe's Archiv., vol. xiii, p. 1.
6. Morax and Elmarsien: Ann. de l'Inst. Pasteur, 1892, p. 210.
7. "Recherches cliniques et bacteriologiques." Paris, 1900, p. 1890.
8. Gonin: Revue med. de la Suisse Romande, Feb. and March.
9. Borthen und Lie: "Die Lepra des Auges." Leipsic, 1899.
10. Trans. Ophth. Sekt. d. 79. Deuts. Naturforscher zu Breslau, 1904.
11. Erdmann: Klin. Monats., May, 1905.
12. Stoewar: Klin. Monats., Aug., 1905, p. 142.

hypopyon and iritis, resembling the so-called serpent ulcer. Of the twenty-six cases reported by Paul, nine presented the characteristics of serpent ulcer. All the cases were associated with diplobacillus conjunctivitis.[13] In only one case was there an associated dacryocystitis. The bacilli were found most plentifully in the tissue at the bottom or near the bottom of the ulcer, in which location they were very numerous.

Bacillus Perfringens.—J. Chaillons[14] reports cases. In each case the eye was slightly wounded by a particle of metal. The progress of the infection was rapid; panophthalmitis developed in forty-eight hours and both eyes were enucleated. The bacillus was found in the pus about the wound, in the anterior chamber and in the vitreous. The uveal tract was the principal seat of the exudation, but the retina was invaded and foci of exudation, which were in reality partially isolated colonies, appeared in the vitreous chamber. Pure cultures were obtained. The bacillus has not been observed in the eye heretofore, but it has been found in otitis, appendicitis and in pulmonary gangrene.

Bacillus Pyocyaneus.—Hunke[15] cultivated a bacillus from the margins of a "ring abscess" which proved to be the *Bacillus pyocyaneus*. McNab[16] reports a case of infection of the cornea by this bacillus.

Patient.—Female, aged 40.

History.—On Aug. 8, 1903, the left eye became irritated and six days later edema of the lids; edema and injection of palpebral and ocular conjunctiva occurred. The conjunctiva was covered by a greenish-colored pus. Almost the entire cornea was the site of an ulcer with deep infiltrated borders; the floor of the ulcer was yellowish-white and covered with pus and débris of corneal tissue. The anterior chamber was almost full of fibrinous, purulent secretion.

Bacteriologic Examination.—Cultivation from the secretion covering the ulcer gave the *Bacillus xerosis* and the *Bacillus pyocyaneus*.

Operation.—Saemisch operation was performed August 9. The secretion from the anterior chamber, removed under antiseptic precautions, gave cultures of the *Bacillus pyocyaneus*.

Postoperative History.—The bacillus could be cultivated from the secretion from the ulcer until the first of September in spite of treatment. Injections of bouillon cultures into the abdominal wall of a guinea-pig developed abscess. Abscess was found in the spleen on autopsy.

McNab gives a short review of two cases reported by Sattler and one case reported by Biotti. In all, the eyes were lost. A case of keratitis reported by Herbert[17] is also referred to. McNab states that the virulent *Bacillus pyocyaneus* may cause ulcer of the cornea without previous traumatism. The secretion is greenish-yellow, the hypopyon thick and fibrinous. McNab[18] also refers to a case reported by Patterson (Edinburgh) of hypopyon keratitis, the ulcer having the character of the serpent ulcer, from which the *Bacillus pyocyaneus* was cultivated.

Bacillus Ulceris Corneæ.—In 1902 zur Nedden[19] published his investigations concerning the superficial marginal ulcer so frequently seen in elderly individuals. According to his observations there occurs quite regularly in this form of ulcer a straight or slightly curved bacillus which measures 0.6 micron in thickness, 0.9 micron in length and has rounded ends. Some of the bacilli are smaller and at times quite long threads are found. Vacuoles are observed in staining. The bacilli are easily colored by the anilin colors; they do not stain by Gram. The bacillus is cultivated on agar plates, the surfaces of which are coated with human blood.

The ulcer presents two forms which are not absolutely sharply differentiated. The first group presents itself as a shallow ulcer, from one to two millimeters from the limbus, measuring 2x1 millimeters, with sharp borders, with slight infiltration of the adjacent corneal tissue. The infiltration occupies the superficial layers of the cornea, the epithelium over the infiltration being slightly irregular and cloudy. The long axis of the ulcer is parallel to the limbus. The ulcer becomes quiescent and heals without doing further damage. In some cases the ulcer extends along the border of the cornea, and it may even advance toward the center of the cornea, but this course is not common.

The second group comprises those cases in which the ulcers are multiple. The small ulcers develop from one to three millimeters from the limbus. They are of various sizes and may encircle the cornea. Some of the ulcers may remain isolated, while others enlarge and coalesce with neighboring ulcers, forming a long, irregular marginal ulcer. They seldom encroach on the center of the cornea. The infiltration of the adjacent parts of the cornea accompanies the ulceration, as in the first group. The ulcer comes to a standstill and healing takes place. The process is almost always superficial. Inoculation experiments were not very satisfactory. Thirty-three cases were tabulated.

In a second article[20] zur Nedden recounts an observation of four years and gives forty-three illustrations of cases, in some of which hypopyon accompanied the ulceration of the cornea. He has confirmed his earlier observations and has named the micro-organism *Bacillus ulceris cornea*. The author observed some cases which were complicated with diplobacilli, a number accompanied by phlyctenulæ and a few with other conditions, but some twenty cases were not accompanied by conjunctivitis or any other disease due to a pathogenic micro-organism. These cases he considers primary corneal ulcer due to the *Bacillus ulceris corneæ*. The affection is usually monolateral, but at times both eyes are involved. The prognosis is favorable.

Tubercle Bacillus.—Tuberculous involvement of the cornea may develop from the sclerocorneal margin as an extension from the sclerotic, or it may develop from the posterior surface of the cornea. In the first instance it is characterized by foci of infiltration, which may produce very slight elevations or nodes, or not affect the surface of the cornea. The small areas of dense infiltration are associated with infiltration of adjacent parts of the cornea, not very dense in character. In cases in which the attack is from the surface, the infiltration is in the anterior layers of the cornea. The epithelium over the infiltrated areas is smooth, except over the dense foci or nodes, where it is often rough. Vascularization of the cornea and pericorneal injection occur, varying in degree in the different parts according to the activity of the process. The small, rough, nodular areas on the cornea, the glazed appearance of the surrounding epithelial surface, and the nodular condition of the sclerotic near the cornea in some of its parts form a picture that will enable the observer to differentiate this

13. Traumatism as the starting-point of the ulcer was established in 69 per cent. of the cases observed by Paul. It is rare to find diplobacillus conjunctivitis in children; because of this it is not surprising to find that 91 per cent. of the cases of diplobacillus corneal ulcer occurred in individuals above the age of 18 years.
14. Ann. d'oculi., Aug., 1905.
15. Zeits. f. Augen., vol. x, No. 5, p. 373.
16. Klin. Monats. f. Augen., Dec. 23, 1903, p. 65.
17. Ophth. Rev., 1901, p. 345.
18. Klin. Monats. f. Augen., Dec., 1904, p. 543.
19. Graefe's Arch., vol. liv, No. 1, p. 1.
20. Graefe's Arch., vol. lix, No. 2, p. 360.

form of interstitial keratitis from those due to syphilis. The cornea is a poor culture medium for tubercle bacilli; it is very difficult to find them in the tissue. Their presence in the nodes may be determined by inoculating the anterior chamber of the eye of a rabbit.

A form of invasion which appears primarily as a deposit on the posterior surface of the cornea, as in uveitis, is described by K. Stargardt.[21] The corneal tissue becomes infiltrated, the infiltration extending from the deposits. The cornea does not become so densely infiltrated as in the ordinary syphilitic parenchymatous keratitis and eventually clears up entirely. Stargardt gives briefly the histories of eight cases of uveitis which he considers to be tuberculous in origin. They were accompanied by tubercular invasion of the apices of the lungs. All presented changes on the entire posterior surface of the cornea, which occurred as numerous, very small, circular excrescences (fat drops). Some of the cases were accompanied by small nodules in the iris angle, particularly below, and with what appeared to be spots of exudation in the choroid from ¼ to 1 disc diameter in size, the cases closely resembling cyclitis serosa. The peculiarity of these cases is that all the patients recovered under mercurial inunction, which, in my experience, has but little effect on tuberculous affections, although Stargardt states that good results have been observed in tuberculosis of the peritoneum from this form of treatment.

Gonococcus. — Affections of the cornea due to the gonococcus are in the nature of ulcers and familiar to all ophthalmologists. It is not necessary here to describe the ulcer. The onset, which may occur at any time during the progress of the ophthalmia after the first thirty-six hours, is marked by a grayish area with roughening and loss of epithelium. The ulcer is probably always secondary to the conjunctivitis. In the greater number of cases the gonococcus is soon joined by the staphylococcus aureus and the ulcer progresses under the influence of mixed infection.

Pneumococcus.—Sattler,[22] experimenting with the pneumococcus, found that when introduced into corneal wounds it produced corneal ulcer and hypopyon. Casparini[23] some years later reported his valuable experiments and observations of the effect of the pneumococcus on the eye. When introduced into the corneal tissue in pure culture the pneumococcus almost invariably produced corneal ulcer and hypopyon. Introduced into the anterior chamber and into the vitreous humor, panophthalmitis invariably followed. Perles' experiments[24] confirmed the results of Casparini.

The corneal lesion most commonly produced by the pneumococcus is the so-called serpent ulcer. This has been the observation of many investigators—Basso,[25] Uhthoff.[8] Basso examined bacteriologically sixty cases of hypopyon keratitis, finding the pneumococcus in nearly all.

Annular abscess of the cornea may develop from the toxins of the pneumococci when the infection is of the uveal tract, as observed by Morax,[26] who observed double metastatic iridochoroiditis with the pneumococcus, the primary focus being the lung. One eye developed abscess of the cornea and the eye was enucleated. No pneumococci were found in the corneal tissue, but many were present in the aqueous. Morax and Fuchs are both of the opinion that ring abscess of the cornea may develop as a result of the presence of the pneumococcus in the anterior chamber.

The toxins developed by the pneumococcus are held to be responsible for the destruction of tissue (Colombo and Ricchi[27]) and the production of hypopyon.

According to Römer[28] the aggressions of the pneumococci play an important rôle in the development of ulcer of the cornea. These substances enable the pneumococci to develop in tissue and the malignancy of the micro-organism is in direct proportion to the ability of the particular stock to develop these substances in the tissues.

Staphylococcus. — Bacterial affections of the cornea occur most frequently with the *Staphylococcus pyogenes aureus*. The condition of the tissue must be favorable, otherwise the specific pathologic disturbance will not occur. This is proved by the fact that the *Staphylococcus pyogenes aureus* is a frequent inhabitant of the conjunctival sac without producing any disturbance whatever. This is also true of the pneumococcus, the streptococcus and the *Bacillus subtilis*. Given a condition of the cornea favorable to the development of the staphylococcus, it only remains to afford a means of entrance. Maceration of the epithelial cells, as occurs in many cases of conjunctivitis, or a slight traumatism removing or disturbing the epithelium surfaces. The most common manifestation of a staphylococcus infection is the phlyctenule. So far as my experience goes the ulcer from staphylococcus infection is usually circular, or if it originates as a result of traumatism it follows the line of the trauma. After operative traumatism the infection from the staphylococcus is more amenable to treatment than that from the other two most frequent infections, namely, the streptococcus and the pneumococcus. Hypopyon keratitis is not a very frequent accompaniment of staphylococcic infection of the cornea; however, extension of the infection to the interior of the eye and the development of a panophthalmitis may occur.

Of seven cases of ring abscess examined, Fuchs[29] found staphylococci in two.

KERATOMYCOSIS.

The different forms of fungus that are pathognomonic for the cornea are *Penicillium glaucum*, *Aspergillus fumigatus*, *Aspergillus flavescens*, *Aspergillus glaucus* and *Aspergillus nigricans*.

Penicillium Glaucum.—The appearance of this micro-organism is described by Wicherkiewicz.[30] The eye had been struck by a piece of dirt about three weeks previously. In the center of the cornea was a yellowish-white mass, nearly round, about half the diameter of the cornea and having a slightly elevated, uneven surface. The mass was firm and tough. It was removed with a Graefe knife. On examination it proved to contain *Penicillium glaucum*.

Aspergillus Fumigatus.—This affects the cornea more frequently than any other fungus. The characteristic lesion is a nearly circular, well-defined, yellowish-white, opaque area, usually measuring from 2 to 4 mm. in diameter, slightly raised, having a matt or greasy surface, with a leash of blood vessels running in from the limbus. In some of the cases the adjacent cornea is irregularly

21. Graefe's Arch., vol. lx, No. 3, p. 469.
22. Trans. Ophth. Soc., Heidelberg, 1885, p. 8.
23. Ann. d. Ottal., vol. xxii, p. 131, 1893.
24. Virchow's Arch., vol. cxi, p. 209.
25. Internat. Med. Congress, Rome, 1894, vi.
26. Ann. d'ocul., vol. cxxxii, p. 409.
27. Ann. di Ottal., No. 12, 1904.
28. Ophth. Soc., Heidelberg, 1905.
29. Graefe's Arch., vol. lvi, No. 1, p. 1.
30. Ophthalmic Year Book, 1904, p. 80.

infiltrated with small cells. Hypopyon may accompany the condition, but is sometimes absent or does not appear until the disease has lasted some time.

Aspergillus Nigricans.—This affects the cornea much as does the *Aspergillus fumigatus*, the principal difference being that the infected area is black (Bull).[31]

Saccharomyces.—The yeast plant has been mentioned by two authors, Stoewar and Lundsgaard,[32] as having been found in ulcer of the cornea. The ulcers were superficial. In Lundsgaard's case the ulcer resembled dendritic keratitis; hypopyon formed but eventually subsided. The observations have not been sufficiently numerous to permit of any definite conclusion regarding the pathogenic action of this micro-organism in the production of ulcer of the cornea.

RESISTANCE OF THE TISSUES.

Sclerotic.—The sclerotic possesses great resistance to invasion by micro-organisms. Ulcer of the sclerotic rarely occurs. In cases of panophthalmitis due to metastasis, or when there is no other adequate opening in the fibrous coat, perforation by infiltration and destruction of tissue takes place through the sclerotic, either along the openings for the ciliary vessels or at the equator along the channels for the passage of the venæ vorticosæ.

Tubercle Bacillus: The tubercle bacillus invades the sclera secondarily to tuberculosis of the choroid and ciliary body. Entering along the canals for the passage of nerve trunks or blood vessels, the tuberculous tissue penetrates between the connective-tissue bundles of the sclerotic, produces ectasia of that membrane and finds its way to the exterior of the globe. On section of such a tuberculous mass the fibers of the sclerotic are found separated, but apparently only partly destroyed.

When tubercle bacilli invade the ocular conjunctiva and subconjunctival tissue they may also invade the episcleral tissue. The process is always superficial and does not as a rule extend to the interior of the eye.

Lepra Bacillus: The bacillus of leprosy may invade the sclera as an extension of leprosy from the ocular conjunctiva at the limbus. Nodules occur of the character described as occurring on the cornea. The denseness of the sclera impedes the progress of the bacilli, but they develop along the channels for the passage of the blood vessels and along the interlamellar lymph spaces. Rows of the bacilli are found with little infiltration of leucocytes. Slow destruction of the tissue of the sclerotic takes place.

GENERAL INFECTION OF GLOBE.

General bacterial infection of the globe may take place directly, as by traumatism or by perforating ulcer, or indirectly, as by metastasis, producing a general inflammation of all the structures of the eye except the lens.

Other Micro-organisms: The principal micro-organisms that have produced such a general inflammation by direct infection are: *Staphylococcus pyogenes aureus, Streptococcus pyogenes, pneumococcus, Bacillus subtilis, Aspergillus fumigatus, Bacillus coli communis, Bacillus perfringens.*

Panophthalmitis due to the *Streptococcus pyogenes*, the staphylococcus and the pneumococcus, has been studied by many observers. It is well known that destruction of the globe by these germs may occur through extension from corneal ulcer, introduction through penetrating wounds and by invasion of the eye after operations which pierce the fibrous coat either through cornea or sclera. The destructive process develops much the same in all, except that the severity of the inflammation is apt to be much greater when the streptococcus is the organism concerned than when the other two are responsible.

The *Bacillus subtilis* is rarely the cause of panophthalmitis. Silverschmidt[33] reports two cases:

Case 1.—The patient, a man aged 20, was struck in the eye by a fragment of stone May 31, 1900, at 4 p. m. On the following day he presented himself at the clinic. At this time the panophthalmitis was so far advanced that all hope of saving the eye was abandoned.

Case 2.—The patient, a woman, aged 30, was injured by a piece of iron from a mattock, Sept. 25, 1905. She presented herself at the clinic of Professor Haab, who removed the piece of iron at noon September 26. Panophthalmitis had commenced. A rod of iodoform was introduced into the globe, but the panophthalmitis advanced, and on September 27 exenteration was performed. An extensive bacteriologic examination was made in both cases, with the result of proving the inflammation to be due to the *Bacillus subtilis*.

The microscopic examination of a series of eyes that had been removed for panophthalmitis in Professor Haab's clinic disclosed the presence of a similar bacillus in six. A case reported by Kayser[34] is referred to.

The *Bacterium coli commune* and the *Bacillus perfringens* are reported to have produced panophthalmitis by extension from corneal ulcer. These micro-organisms are seldom met.

A few cases of infection of the vitreous humor and deep tissues of the eyeball with aspergillus fumigatus have been reported. Römer[35] reports the case of a boy who cut his eye with a breadknife, causing a penetrating wound in cornea and sclera about 6 mm. long. The patient was seen at the clinic on the same day and the wound was properly dressed. There was very slight reaction. On the ninth day the wound was healed, but there was some ciliary injection in the vicinity of the wound. Some pain was experienced after this. On the thirteenth day there was hypopyon. On the fourteenth day the eye was enucleated. The globe was opened under antiseptic precautions. In the vitreous chamber near the anterior portion a number of yellowish, purulent foci were found. In smear preparations small, oval, highly refractive bodies were found, resembling spores. Cultures were made, showing a growth of the aspergillus fumigatus. The pathogenesis was established by inoculating the cornea and vitreous of a rabbit.

Leber,[36] Nobbe[37] and Kampberstein[38] report a case each. In all the cases the aspergillus was carried into the eye as the result of a penetrating wound.

METASTATIC INFECTION OF GLOBE.

The micro-organisms that affect various parts of the *globe* by metastasis are: Actinomycosis, pneumococcus, staphylococcus, streptococcus, tubercle bacillus, typhoid bacillus and *Micrococcus intracellularis meningitidis.*

Actinomycosis.—In an article by L. Muller[39] a case is reported purporting to be one of disseminated actinomycosis of the retina:

Patient.—A male, aged 22, entered the hospital with a possible diagnosis of miliary tuberculosis. In the fundus of the right eye a yellowish-white nodule one-fourth of the diameter of the papilla was observed lying near the papilla above and

31. Trans. Twelfth Inter. Med. Cong., Moscow, vol. vi, p. 13.
32. Klin. Monats. f. Augen., January, 1900, p. 13.
33. Ann. de l'Inst. Pasteur, April 25, 1903.
34. Centrlb. f. Bakt., vol. xxxiii, p. 241, 1903.
35. Klin. Monats. f. Augen., April, 1902, p. 331.
36. Heidelberger Kongress, 1897.
37. Graefe's Arch., 1898, vol. xlv, p. 700.
38. Klin. Monats. f. Augen., February, 1903.
39. Klin. Monats. f. Augen., March 28, 1903, p. 236.

to the nasal side. It was surrounded by a faint pigment ring. Eleven days later the yellowish nodule had increased in size and four more similar nodules had appeared, their diameter being about that af a large papilla. Three smaller but similar nodules had appeared in the retina of the left eye. Eight days later the picture was not materially changed. A diagnosis of tubercular choroiditis was made. The patient died one month after entering the hospital.

Postmortem.—This disclosed disseminated actinomycosis. The posterior halves of the globes were obtained, hardened in formalin and examined microscopically. No definite actinomycosis plant was found, but the microscopic structure of the nodules was such that no doubt was left in the minds of the author that the nodules were the result of the metastasis of actinomyces to the retina.

There is no well-authenticated case in literature and in consequence it is only possible to say that the occurrence of metastatic actinomycosis is probable.

Frankel[40] saw around the macula lutea of both eyes five or six whitish, round spots, about one-third disc diameter, which resembled miliary tubercles of the choroid. These spots disappeared in about six weeks. The vision was impaired, the defect in the fields of vision being an irregular scotoma. The defect in vision lasted about a year. Frankel believed that the process was due to minute emboli of micro-organisms, probably the pneumococcus.

Pneumococcus (*Micrococcus Lanceolatus*).—Metastases of the pneumococcus may occur in cases of non-perforating injury to the eye which reduces the resisting power of the tissues to the influence of micro-organisms that may be circulating in the blood, even when no focus of infection is discoverable. It is well known that this micro-organism is found in the buccal cavity in 20 per cent. of normal individuals, and it is not improbable that a mild degree of pneumococcemia may exist. In a case which I[41] reported three years ago there was an indefinite history of a blow on the eye, without perforation, two days before the loss of vision and commencing inflammation were noticed. Three days later the eye presented the appearance of intense metastatic choroiditis. Evisceration was performed. Examination of the contents of the globe, which were purulent, disclosed a coccus, with capsule, in smear preparations and in cultivation, which proved to be the *Pneumococcus micrococcus lanceolatus.*

Metastatic infection of the globe from this micro-organism is most frequent in cases of pneumonia and in pneumococcic meningitis. On March 9, 1906, I saw a patient, a man, aged 58, who was recovering from double lobar pneumonia, from which he had been suffering for three weeks. Three days previously the left eye became painful, vision was lost, the pain increased, chemosis and swelling of the lids developed, with increased lachrymation. When seen there was a yellow reflex from the interior; anterior chamber and lens fairly clear; pupil a little larger than normal; iris dull and slightly swollen. The diagnosis of metastatic choroiditis, probably from the pneumococcus, was made.

Both eyes are sometimes affected.

Staphylococcus.—Liebrecht[42] reports a case of metastatic choroiditis caused by the staphylococcus:

Patient.—A young man, became ill six days before entering the hospital. His mother said that a furuncle on the forehead was the first manifestation. When seen there was swelling of the left side of the forehead and a small wound from which pus was squeezed. The pus contained staphylococci. There was severe staphylococcemia. The right pupil was dilated. The patient died shortly after entering the hospital.

Autopsy.—The posterior halves of both eyes were removed. Small hemorrhages were present in the retina of each eye. The choroid was studded with small, white circular nodules.

Microscopically, the retinæ were normal except for the hemorrhages. The choroid was normal except at and in the vicinity of the white nodules. These were miniature abscesses. In the middle of each small abscess a mass of staphylococci was found, lying close beneath the lamina elastica. The abscesses were irregularly distributed.

Streptococcus.—A case of streptococcus metastasis is also reported by Liebrecht:[42]

Patient.—A young man became ill six days before entering of the right breast, which was opened and found to contain streptococci. General pyemia developed. On the fourteenth day after the beginning of the illness, the eye became affected, the vision failed, and in twenty-four hours after the first symptoms there were iritis, much chemosis and some exophthalmos—in fact, the picture of beginning panophthalmitis. The symptoms were greater on the following day and the eye was enucleated. On section, pus was found in the vitreous chamber. Streptococci were found in the vitreous chamber, in the retinal tissue and subretinal tissue. The metastasis had undoubtedly taken place in the small vessels in the temporal half of the retina. The patient recovered. There was no streptococcemia.

Metastatic panophthalmitis may occur by the transfer of the staphylococcus or streptococcus through the blood current to the choroid and retina from any part of the body where a pathologic process due to either of these micro-organisms is taking place. I have observed it accompanying ulcer of the vagina, furuncle of the forehead, empyema and abscess of the leg. Acute endocarditis may cause isolated hemorrhages in choroid or retina or may cause a panophthalmitis, the starting point of which may be choroid or retina.

Tubercle Bacillus.—When tubercle bacilli infect the interior of the eye they almost invariably develop in the vascular tunic, namely, choroid, ciliary body and iris. The development is in three forms: First, as miliary tuberculosis, in which small, circular, pale-yellowish spots appear in the tissues; second, diffuse tuberculosis, that of tuberculous inflammation affecting the entire uveal tract to a greater or less extent and being accompanied by disturbing evidences of inflammation, and, third, conglomerate tubercle, which develops as an intraocular tumor, being often difficult to differentiate from sarcoma of the choroid and glioma retinæ.

Miliary tuberculosis of the choroid is the most common form. In general miliary tuberculosis it occurs, according to Bock,[43] in 82.7 per cent. of the cases; others put the percentage much lower. The tubercles vary in size from a pin-point to 2 mm.; they are seldom larger. A tuberculous patch 2 mm. in size is usually made up of a number of nodules. The tubercles may be very few in number or they may be very numerous. They occur most commonly in the vicinity of the disc, but may be scattered over the entire fundus; they are very slightly raised, usually without a pigmented ring, causing no symptoms of inflammation and interfering but little with vision, the condition presenting to some extent the appearance of the exudative stage of disseminated choroiditis. The tubercles spring either from the chorio-capillaris or from the layer of large vessels, the former site being the more common. Since it often happens that a blood vessel is found in the center of a miliary tubercle, it is thought that the

40. Arch. d. Ophth., vol. xlviii, p. 456-458.
41. Ophth. Rec., February, 1903, p. 61.
42. Klin. Monats. d. Augen., Sept. 3, 1903, p. 127.
43. Virchow's Arch., vol. xci.

infection is through the medium of the blood vessels, but the lymph spaces are also credited with being avenues of extension. The tubercles form quite rapidly, appearing within twenty-four hours; they are, of course, most common and numerous immediately before the death of the patient.

The tubercle may project forward into the retina or posteriorly into the lamina fusca. The tubercle bacilli, according to Parsons,[44] are present in greatest number in the caseous area. (I have found them to be most plentiful at the periphery of the caseous area.) They may be very numerous, but as a rule are not present in large numbers.

Diffuse tuberculosis of the choroid is next in frequency. It develops as a succession of indifferent miliary tubercles, which may extend into and involve the retina and sclera, and the condition may present the appearance of pseudoglioma, or even of plastic choroiditis.

The solitary or conglomerate tubercle is uncommon. Resolution may take place, leaving a cicatrix, but the usual course is progression and perforation.

It sometimes occurs that secondary tuberculous nodules develop in the papilla and retina. Such a case is reported by Stock.[45]

Tubercle of the choroid is secondary to general tuberculosis or tubercular foci in other parts of the body in almost all cases, but cases of solitary or conglomerate tubercle of the choroid have been observed (zur Nedden[46]) in which other foci could not be determined. In spite of this, we are not at present in position to state that tuberculosis of the choroid is ever a primary manifestation.

Typhoid Bacillus.—I am not aware that the typhoid bacillus has been recovered from the globe at any time, but a few cases of metastatic panophthalmitis during typhoid fever have been reported. Gilfillin[47] reports such a case in which the metastasis occurred on the twenty-sixth day of the attack of typhoid in an eye previously blind. Rupture of the globe and the escape of pus were followed by healing, resulting in a deformed globe.

Retinal hemorrhage accompanying typhoid has been observed not infrequently. What rôle, if any, the bacilli have in these disturbances is not known.

The question of the influence of toxins, especially the toxins of the typhoid bacillus, is considered by Gaspanini,[48] who is of the opinion that changes in the vessel walls and exudation and hemorrhage are in many cases due to the presence of the toxins in the blood, the bacilli being absent. In discussing this statement Bietti[49] states that the fact that the bacilli have not been found in these cases does not prove that they were not present at the beginning of the process, as they may have been present and have disappeared, since the examination of the tissue was not made until the process was two or three weeks old.

Metastatic processes may first affect the iris as Michel[50] has shown, a metastatic streptococcus infection having occurred in the circulus arteriosus iridis major, and the same may occur in the ciliary body, as in the case reported by Römer,[51] in which the beginning of the process was due to a pneumococcus embolus in the ciliary body.

Axenfeld was one of the first to point out the fact that in metastatic ophthalmia the retina is often the part first affected. His investigations led him to believe that this was the condition in about one-third of the cases. It may happen, as shown by Axenfeld and Goh[52] that in double-sided metastasis the choroid may be primarily affected in one eye, the retina in the other.

Winterstein[53] found the *Micrococcus intracellularis* in the uveal tract in a case of metastatic ophthalmia.

IRIS.

The principal micro-organisms that affect the iris are: Bacillus of leprosy, bacillus of tuberculosis, gonococcus, pneumococcus, staphylococcus and streptococcus.

Infection of the iris by the staphylococcus, streptococcus or pneumococcus may take place as a result of extension from corneal ulcer, introduction through perforating wounds, by extension from the deeper parts of the eye, as in panophthalmitis, beginning back of the iris, and by metastasis directly affecting the iris. A purulent process is the result of infection by these micro-organisms.

Leprosy Bacillus.—When the leprous bacilli infect the iris it is by extension from the ciliary body. The iris is invaded by the bacilli and by leucocytes and becomes enormously thickened. Isolated nodules are said not to occur. The condition is associated with manifestations of leprosy in other parts of the head.

Gonococcus.—Iritis as an accompaniment and probably a result of gonorrhea, has been observed by many ophthalmologists. The recurrent nature of this form of iritis is well known. Fresh attacks of urethral gonorrhea and gonorrheal rheumatism are followed by recurrence of the iritis. Although the probable causative relation is recognized, no cases, so far as I am aware, have been reported of the recovery of the gonococcus from the aqueous humor or from the iris. It is supposed, as set forth in the article by Cheatham,[54] that the attacks are excited by the ptomains or toxins generated by the gonococcus rather than by the presence of the micro-organism itself.

Tubercle Bacillus.—Tuberculosis of the iris occurs in three distinct forms:

1. Miliary tubercle, characterized by the appearance of a number of small yellowish-white nodules which may appear in any part of the iris, and cause slight thickening and an increase of vascularity of the iris in the part affected, accompanied by a very slight plastic exudation which aids in the development of posterior synechiæ. Vision is impaired and serious injury to the globe may follow, but a very benign course may be run, the tubercles disappearing spontaneously. Children and young adults may present this form of tuberculosis of the iris.

2. Conglomerate tubercle, characterized by the development of a single tubercular mass, usually springing from the major zone of the iris, and projecting into the anterior chamber. Small isolated tubercular masses may also be present. The mass, pale in color, is only slightly vascular at its base and produces but little inflammatory reaction in the iris. The tendency is to increase in size quite rapidly, to fill the anterior chamber, to become disseminated, to perforate and to cause destruction of the globe.

44. "Pathology of the Eye," p. 464.
45. Münch. med. Wochft., June, 1902.
46. Klin. Monats. f. Augen., Oct. 13, 1903, p. 354.
47. Medical News, July, 1903, p. 165.
48. Ann. di Ottal., vol. xxiv, 1895.
49. Klin. Monats. f. Augen., vol. xli, p. 72.
50. Zeits. f. Augen., vol. vii, 1902, p. 1.
51. Klin. Monats. f. Augen., 1902, p. 329.
52. Arch. f. Augen., vol. xliii, 1897.
53. Gruvert. Ueber Ret. Optica und Metastatica, Heidelberger Kongress, 1902.
54. Arch. of Ophth., vol. xxv, No. 4.

3. General diffuse tubercular infection of the iris is a rare manifestation. It is characterized by a general thickening of the iris tissue without definite tubercular masses, and is accompanied by a flocculent exudation which may almost fill the anterior chamber. The condition advances slowly; necrosis takes place after considerable time has elapsed from the onset of the affection.

The diagnosis of tubercular iritis may be made by eliminating syphilis and iritis nodosa by the tuberculin reaction, by the discovery of the tubercle bacillus in the affected tissue, and by the inoculation of the anterior chamber of the eye of the rabbit with bits of infected iris tissue, and, possibly, by exudation taken from the anterior chamber of the affected eye. Tubercular iritis is usually monolateral. The question of the occurrence of tuberculosis primarily in the iris has been discussed *pro* and *con* by many writers. The weight of evidence appears to be in favor of its being primary in some cases, at least.[55]

Other Micro-organisms.—The extension of inflammatory processes primarily affecting the cornea due to the *Bacterium coli commune*, Klebs-Loeffler, Morax-Axenfeld, *Bacillus perfringens*, *Bacillus pyogenes* and *Bacillus subtilis* may lead to bacterial invasion of the iris, but this forms only a part of the general invasion of the globe.

VITREOUS.

Primary infection of the vitreous with micro-organisms is extremely rare, if it ever occurs. The invasion of the vitreous with inflammatory products and with micro-organisms is secondary to inflammation extending from other tissues of the eye or to their introduction by penetrating wounds.

LENS.

I have demonstrated the presence of the staphylococcus in the tissues of the lens with small-cell infiltration following a penetrating wound of that body, but invasion with micro-organisms in any other way probably does not occur.

RETINA.

The infection of the retina with micro-organisms has been termed exogenous when it occurs from injury or by the extension to bacterial invasion from neighboring tissues or from the vitreous or uveal tract; and endogenous or metastatic when the infection takes place from the blood vessels or lymph channels or the perivascular lymph spaces.

Exogenous Infection.—The retina may be invaded by any of the micro-organisms that grow and produce pathogenic or pyogenic processes in the other tissues of the eyeball. Micro-organisms carried into the eye by penetrating foreign bodies seldom produce an inflammatory process that is confined to the retina.

Tubercle Bacillus.—The invasion of the retina by the tubercle bacillus is almost always secondary to tuberculosis of the optic nerve or of the uveal tract, and is, in the greater number of cases, exogenous, but in some cases reported the development was apparently due to endogenous infection.

Endogenous (Metastatic) Infection.—It is now well-known that metastatic panophthalmitis due to the streptococcus, staphylococcus, Liebrecht,[56] and possibly the pneumococcus may originate by the transfer of the micro-organism from some focus in the body to the retina by means of the blood-current. Infections of less severity undoubtedly occur in cases of bacteriemia. In the retinitis septica of Roth, which now includes a number of conditions, the metastatic transfer of micro-organisms from outside foci to the retina plays a part in some of the cases. Frankel[60] and Goh[57] have reported cases in which the pneumococcus was the micro-organism. In Goh's case there were white spots and hemorrhages in the retina and on microscopic examination the pneumococcus was found in the exudation, which formed the white spots.

Tubercle Bacillus.—The invasion of the retina with the tubercle bacillus from the optic nerve in cases of tubercle of the optic nerve may be by endogenous infection, the bacilli advancing along the lymph channels, but it is probable that the invasion is simply by way of the tissue of the retina in the manner of exogenous infection. Two cases of tuberculosis of the retina apparently primary and due to endogenous infection, have been reported; one by O'Sullivan and Story,[58] a second by Hancock.[59] In both the histologic appearance was one of tubercle, but no tubercle bacilli were demonstrated.

Actinomycosis.—As a metastatic infection of the retina, actinomycosis has been described by L. Muller.[59] Although the elements of the fungus were not found in the nodules that developed, the anatomic findings were such that the correctness of the diagnosis could scarcely be doubted.

Leprosy.—When the bacillus invades the ciliary body and choroid it may also pass into the retina. However, the retina is seldom involved in leprosy and when it is the disturbance is slight. The degree of the invasion is discussed by Borthen and Lie,[9] Frank and Delbanco.[60]

METASTATIC OPTIC NEURITIS.

In the opinion of Parsons,[61] metastatic optic neuritis occurs much more commonly than the recorded cases would lead one to expect. Parsons refers to four reported cases, two by V. Michel,[62] and two by Axenfeld.[63] Michel's first case occurred in a man with epididymitis and endocarditis. The optic papillæ were hyperemic and there were some small venous hemorrhages in the retina. Small foci of infiltration were found in the orbital portion of each optic nerve. No micro-organisms were demonstrated. The second case occurred in a man with pyemia, who had metastatic iridocyclitis. There were three miliary abscesses in the left optic nerve, one in the dura. These abscesses contained micrococci in their centers. Axenfeld's first case was one of pneumococcic metastasis occurring in a child of two months. The second case was that of a child of ten days in which the infection was with streptococci.

Parsons remarks that "it is possible that optic neuritis following infectious diseases is not due to embolism, but to toxins." This would apply to post-diphtheritic papillitis, of which I have seen a number of cases. Recovery is complete in these cases.

Tubercle Bacillus.—The optic nerve may be invaded by tubercle bacilli as an extension from the brain, Sattler,[64] as an extension from the choroid and from the orbit, Spaulding,[65] and by the bacilli in miliary tubercles, undoubtedly metastatic, in connection with miliary tuberculosis.

55. Ivenig: A. f. O., vol. xxxi, 1895.
56. Klin. Monats. f. Augen.
57. Arch. f. Ophth., vol. xliii, 1, 1897.
58. Trans. R. A. of Med. of Ireland, vol. xvii, 1899.
59. Royal Lond. Ophth. Hosp. Reports, vol. xvi, p. 2, 1905.
60. Arch. f. Ophth., vol. i, p. 2, 1900.
61. "Pathology of the Eye," vol. ii, p. 682.
62. Zeitschr. f. Augen., vol. vii, 1902.
63. Arch. f. Ophth., vol. xl, p. 3, 1894.
64. Arch. f. Ophth., vol. xxiv, 3, 1878.
65. Trans. Amer. Ophth. Soc., 1903, p. 141.

Development in the Nerve Itself without Known Foci Elsewhere.—In Spalding's first case the tubercular mass developed in the optic nerve and projected into the vitreous chamber, filling one-third of it. The growth occurred in a boy of eight years and followed traumatism. The patient remained free from other manifestations of tuberculosis. A. Knapp[66] reports a similar case to that of Spalding. The bacteriologic examination was positive for tubercle bacilli. The patient, a negro child of two years, subsequently developed general tuberculosis.

Leprosy bacilli have been demonstrated in the optic nerve, Borthen and Lie,[9] but observations of this nature are extremely rare.

In the consideration of this subject syphilis has been purposely omitted.

DISCUSSION.

ON PAPERS OF DRS. DERBY, SHUMWAY, WEEKS AND PUSEY.*

Dr. Robert L. Randolph, Baltimore, said that while Dr. Weeks disclaims any intention of making his communication an exhaustive one, few more exhaustive articles on the subject will be found in this country. Dr. Randolph said that he knows of no one whose experience in laboratory and clinic better fits him to speak interestingly and with authority. "Bacteria I Have Known" would be an attractive and suggestive title for a contribution from him. For instance, the first organism which Dr. Weeks mentions in his paper is *Bacillus coli communis*. All physicians know that this organism is found in great number in the human feces and is a regular inhabitant of the lower intestine, facts which have contributed not a little to the generally accepted view that it is nonpathogenic, and yet one of the most intense cases of panophthalmitis which Dr. Randolph has seen, and one to which Dr. Weeks referred, was one in which this very organism was obtained in pure culture from the interior of the eye. While it is true that the degree of mechanical insult has much to do with the intensity of traumatic inflammations, no matter what be the organism present, it is worthy of note that the colon bacillus under certain conditions can become as deadly as one of the commonly recognized pathogenic bacteria. It is surprising to see how many cases there are on record in which bacilli have been demonstrated in the interior of the eye and not one of the so-called pus organisms. Panophthalmitis often presents a striking picture of suppuration, and *a priori* we would expect always to find one of the bacteria commonly known as pyogenic. Cases like the one just mentioned have been reported by Haab, de Schweinitz and others, and they show that there are organisms other than the so-called pus organisms which are capable of producing suppuration, and this case especially points to the fact that organisms ordinarily harmless sometimes possess marked pathogenic properties.

In speaking of the metastatic form of suppurative panophthalmitis, Dr. Randolph understood Dr. Weeks to say that he had found either a streptococcus or a staphylococcus in the eye in cases in which the metastasis had occurred from a leg ulcer and from a furuncle on the forehead. Dr. Randolph has seen quite a number of cases of metastatic panophthalmitis, but has always failed to get any growth from cultures made from the interior of the eye, and yet two of these cases were almost as fulminating as some which he has seen in which the infection was an ectogenous one, as after a penetrating wound, and, while negative results in these two cases do not prove conclusively that no organisms had ever been present in these eyes at one time in the history of the inflammation, they might at least be said to suggest that the panophthalmitis was caused by the toxins which had found their way into the eye or that the bacteria present were beyond the power of present-day microscopes to detect. The former explanation is probably the true one in gonorrheal iritis which is seen usually after the knee-joint is attacked. In gonorrheal arthritis the toxins which these organisms liberate may reach the eye and excite inflammation. From the behavior of this organism in the conjunctiva and elsewhere in the body it is inconceivable that the condition which we call gonorrheal iritis is due to the presence of gonococcus in the iris. Those who have experimented on animals will recall what an intense panophthalmitis can be produced by comparatively few organisms far less virulent than the gonococcus when they are shut up inside of the eyeball—that is to say, when they have been injected into the interior of the eye. It would be wrong, Dr. Randolph thinks, to regard gonorrheal iritis as the evidence of gonococci in the iris tissue. As regards the organisms which are so closely identified with inflammations of the outer covering of the eye, for instance the Morax-Axenfeld diplobacillus and the Koch-Weeks bacillus, he has been struck with the great difficulty of getting either of these organisms to grow under artificial conditions. His experience in this connection has been disappointing. The same is true to a less extent of the pneumococcus, which is notorious for the uncertainty of its behavior when transferred to artificial soil. Dr. Randolph emphasized the following matters of personal observation, suggested by passages in Dr. Weeks' paper: Bacteria ordinarily harmless under certain conditions can set up intense reaction. Other than the so-called pyogenic organisms are capable of producing suppuration, as is evidenced by the number of cases in which bacilli have been found in the eye in suppurative panophthalmitis. In metastatic panophthalmitis the absence of bacteria has been noted by others as well as by himself, which suggests that in some of these cases at least the toxins are present in the interior of the eye and are responsible for the panophthalmitis, and as an illustration of an ophthalmia probably caused by toxins might be cited gonorrheal iritis.

Dr. W. C. Posey, Philadelphia, stated that since Morax and Axenfeld, though working independently of one another, first described the diplobacillus which has received their conjoined name, the profession has become quite conversant with the type of conjunctivitis which has been designated as subacute, chronic or angular conjunctivitis. The characteristics of this form of inflammation are often so striking that a bacteriologic examination is unnecessary to detect its proper nature, while the rapid disappearance of the inflammation under applications of zinc renders the diagnosis conclusive. He agreed with Dr. Pusey that in addition to the usual type the diplobacillus is capable of occasioning other ocular conditions, and these are very varied and may assume forms usually thought to be due to other organisms or other inflammatory processes. Gifford, of Omaha, who should take equal rank, almost, with Morax, Axenfeld and Peters in their studies of the diplobacillus, has stated in a recent article in the *Ophthalmic Record*, November, 1905, that there are two forms of conjunctivitis which may be excited by this organism, which without the aid of the microscope might frequently be mistaken for trachoma. One, an acute type, presents rather profuse secretion and marked swelling and roughness of the retrotarsal folds, while in the second or chronic form the eyes are red and watery and half-dry secretions cover the edges of the lids, the retrotarsal folds being moderately rough and red. The tarsi, however, are but slightly affected. This form is chiefly encountered among the poorer classes of Russian Jews, and Gifford believes it to be the product of dirt, neglect and slight eversion or closure of the lower tear points. Not only may the organism occasion varied types of conjunctivitis, but, as originally pointed out by Morax and lately substantiated by many others, inflammations of the cornea may be excited by it, ranging from small round points of infection to a malignant involvement of the corneal tissue in a manner not dissimilar to the process observed in ulcus serpens. In these extreme cases, however, the inflammation is rarely so active as that occasioned by the pneumococcus, and while there may be a progessive border to the ulcer, it is rarely so marked, and the spread of the ulcer is more rapidly controlled. Iritis with synechia and hypopyon are not uncommon, and there have been a few cases recorded in which treatment was not undertaken until the process had obtained marked headway, in which the eye was lost from panophthalmitis. Usually the posterior part of the eye is un-

66. Arch. of Ophth., vol. xxxii, No. 1, p. 22.

* Editor's Note: The paper of Dr. Pusey appeared in The Journal last week. The paper of Dr. George S. Derby, Boston, on "The Bacteriology of the Eyelids," is too long for publication in The Journal, and, by arrangement with Dr. Derby, is omitted. It will be found in full in the Transactions of the Section on Ophthalmology, 1906.

affected. The most common type of ulceration of the cornea excited by the diplobacillus, Dr. Posey said, occurs in the form of a disc-like infiltration of the superficial layers of the central portion of the cornea. It is usually several millimeters in diameter and of a glassy-gray color. Ordinarily the edges of the ulcer are raised, and the neighboring corneal tissue is superficially hazy and stippled, while numerous processes of infiltration project from the ulcer into the deeper tissues. Pericorneal injection is quite marked.

In nearly all the cases with corneal involvement there is a history of long-standing catarrh of the conjunctiva with the excoriations at the angle of the lids, which are so typical of the catarrh of the diplobacillus. A history of traumatism is also obtainable in most instances, indicating the avenue through which the cornea becomes infected. Although eyes have been lost from ulceration excited by this micro-organism, the prognosis in corneal affections excited by it is good, for the ulcers yield readily to treatment and the opacities which remain are nebulous, dense maculæ persisting only in rare instances.

Disease of the lachrymal apparatus is rare, and the mucous membrane of the nasopharynx, though at times implicated, does not seem to possess any great susceptibility to the diplobacillus. The young are rarely affected, adults and middle-aged being the chief sufferers. Dr. Posey said that all forms of inflammation excited by the diplobacillus yield readily to applications of zinc, and agreed with Dr. Pusey that they are comparatively uninfluenced by any of the silver salts or their substitutes. He emphasized the importance of bacteriologic examination in all obscure or doubtful cases of conjunctivitis or keratitis, for while the diagnosis of the subacute type of conjunctivitis, which is the usual manifestation of inflammation excited by the organism, is easy, the differentiation of other types by mere clinical observation is impossible. Dr. Pusey's paper, he said, will do much to second Dr. Gifford in his efforts to diffuse throughout this country information regarding the various types of inflammation which the diplococcus may excite, and this is particularly desirable at this time, as there is evidence from foreign publications that ocular diseases occasioned by this germ are on the increase. The records of Dr. Pusey's 10 cases, he said, are of exceeding value, particularly his report of Case 8 of acute conjunctivitis in a negro, in whom the clinical diagnosis was made of probable gonorrheal ophthalmia, but which the microscope showed to be due to the diplobacillus, inasmuch as the conjunctiva of the negro seems to possess a different susceptibility from the ocular mucous membrane of white patients to the action of germs, as indicated by its behavior when infected by the agents producing trachoma and vernal conjunctivitis. The Morax-Axenfeld bacillus, Dr. Posey said, has been found in Philadelphia in about the same proportion as in European cities. Sweet and Shumway have described ulcers of the cornea which it occasions, and while as yet no record has been made of its exciting the bizarre forms of conjunctivitis described by Gifford, we are familiar with it in its usual manifestations.

DR. GEORGE S. DERBY, Boston, said that he does not think that any figures are published with regard to the frequency of infection with the Morax-Axenfeld diplobacillus in this vicinity. In 78 cases of conjunctivitis examined by Dr. H. C. Parker and himself at the Massachusetts Eye and Ear Infirmary the diplobacillus was found seven times in pure culture and four times contaminated. The cases were the so-called subacute blepharo-conjunctivitis. They were not severe cases at all. In a smaller series of cases of corneal ulcer examined last summer the diplobacillus was not found in a single case.

DR. EDWARD JACKSON, Denver, declared that he would like to say that he agrees with Dr. Derby in what he says in his paper regarding the statement of McNab with reference to the rôle of the diplobacillus in causation of ulcerative blepharitis not being supported. Dr. Jackson has not found any evidence that blepharitis, apart from that which occurs with the usual diplobacillus conjunctivitis, is due to it, or that the diplobacillus is present. Some of the earlier accounts of the diplobacillus conjunctivitis referred to epidemics. The disease persists for months or years, so that in many communities it must be continually present, but it does occur in epidemics. In the spring of 1904 he came across evidence of a very extensive epidemic. Cases were seen from different portions of the state of Colorado. Dr. Jackson gave the distances by rail from Denver; they were somewhat greater than by straight line.

Date	Locality	Direction	Distance
March 14	Denver		
" 19	Georgetown	West	50 miles
" 21	Golden	"	15 "
" 23	Lyons	Northwest	48 "
April 2	Platteville	Northeast	35 "
" 4	Aspen	West	401 "
" 23	Trinidad	South	214 "

There were additional cases seen in Denver during that period. Now these places were far removed from one another, and the cases all occurred within a period of six weeks. A striking thing was that in connection with each case there was a history of a local epidemic. In the case of the child from Lyons all the other children in the family were affected, and there were cases in the school. The man from Aspen said that there were at least 200 cases in this town of 3,000 people. Each of these cases represented an epidemic. Furthermore, they came not only from separate places, but represented different climatic conditions. In Aspen they had two or three feet of snow on the ground for many weeks. In other places there had been much wind and dust. Georgetown is in the heart of the mountains, Golden and Lyons at the foot of the mountains and the other places out on the plains. This does not throw much light on the causation of epidemics, but Dr. Jackson thinks it is an interesting observation. He has seen several cases with slight corneal involvement, but only one severe case. That was a few weeks ago. The ulcer was extremely deep, such an ulcer as one would expect to find from a deep corneal abscess that had opened spontaneously. It yielded well to treatment, touching with nitric acid and the use of zinc for the diplobacillus. The diplobacilli were plentiful in the conjunctival secretion, but in the material from the bottom of the ulcer there were more staphylococci than bacilli.

DR. C. D. WESCOTT, Chicago, said that with reference to the use of zinc some well-defined cases have been reported which resisted treatment with zinc. Many American patients resist the zinc therapy. The conjunctiva seems irritated by any solution of zinc. He asked some of the members to describe in what manner they have used the treatment, in what percentage solutions. He has found that some patients bear the zinc ointment who will not tolerate the solutions.

DR. GEORGE E. DE SCHWEINITZ, Philadelphia, stated that the diplobacillus of conjunctivitis is of considerable frequency in Philadelphia, and it has been found that in a certain number of cases zinc is not entirely an efficient remedy. Dr. Gifford has suggested that the ordinary lotion of zinc, from 1 to 4 grains to the ounce, should be supplemented by touching the lids with a stronger solution, and that has been Dr. de Schweinitz' practice, particularly in cases of long persistence. Applications of silver not only do not improve the condition, but seem to make it worse. Dr. de Schweinitz has seen one case of double panophthalmitis which developed on the ninth day after labor. Cultures from the pus in the anterior of the eye, in the vitreous and in cutaneous abscesses showed pure streptococcus growth. Still more interesting is the fact that the patient recovered, though, of course, blind. It is the only patient with double metastatic panophthalmitis in his experience who has recovered.

DR. C. W. HAWLEY, Chicago, said that he has not had much experience, so far as demonstration with the microscope is concerned, but in a number of epidemic cases he has used antipyrin very successfully. He has also used hydrastis in similar cases in which the zinc was not tolerated.

DR. WILLIAM M. SWEET, Philadelphia, said that his first experience with the diplobacillus was in 1898, shortly after the appearance of Dr. Gifford's paper. At that time he had under treatment a woman with a mild form of conjunctivitis, associated with a moderate discharge and considerable itching of the lids. Silver, tannin and the usual remedies were employed, but the inflammation persisted. After reading Dr. Gifford's paper he suspected that the stubbornness of the inflammation was due to the presence of the diplobacillus, and he made cover-glass smears of the discharge and found the germs present in large numbers. Under the use of a solution

of zinc sulphate the inflammation subsided in a few weeks. For the purpose of determining to what extent the germ was to be found in Philadelphia, he made spreads and cultures of the conjunctival discharge in 31 additional cases of conjunctival and corneal disease seen in the Jefferson and Polyclinic hospitals, and found the diplococcus present in 6 cases. The patients examined included those suffering from phlyctenular disease, hypopyon keratitis, trachoma and simple corneal ulcers. In two of the cases showing the germ there were small ulcers of the cornea.

The results of this study were presented to the Section on Ophthalmology of the College of Physicians of Philadelphia on Dec. 20, 1898, and the abstract of the paper printed in the proceedings of the college, but the original paper was not published, as he intended carrying the investigations further, but failed to do so. At that meeting he exhibited a shoemaker with chronic inflammation of the conjunctiva of both eyes, which had existed for a long time. There was a moderate secretion, the veins in the fornix were prominent and the vessels on the globe were slightly congested and tortuous. Examination of the scanty discharge showed the diplobacillus. For the purpose of determining the effect of the remedies ordinarily employed for chronic conjunctival inflammation the man was given treatment at the dispensary for several weeks with tannin, silver, boroglycerid and weak bichlorid of mercury, and at home a saturated solution of boracic acid. No improvement could be detected, so that a solution of zinc sulphate, 1 grain to the ounce, was ordered, and in about a week the inflammation had subsided sufficiently to relieve the patient of the annoying symptoms of which he had complained. From a study of the well-developed germ there is seen to be a clear space surrounding most of the double rods, indicating some form of envelope, and Dr. Sweet therefore felt at that time, as he does now, that the contention made by Gifford that the germ had a capsule was correct, although denied by Morax, Axenfeld and Peters.

DR. CHARLES H. WILLIAMS, Boston, mentioned a practical point in regard to the use of zinc. It will often be found beneficial to use the sozoiodolate of zinc in the same strength as the solution of sulphate, especially if combined with chloretone (a solution of chloretone 1 grain to the ounce). The chloretone preserves the solution and acts as a sedative to the conjunctiva, so that the applications are less irritating.

DR. NELSON M. BLACK, Milwaukee, declared that he has noticed that in these cases of diplobacillus conjunctivitis the patients almost invariably complain of symptoms closely allied to those due to refractive errors and report that they have had their glasses changed a number of times without benefit. This shows the importance of a bacteriologic examination of the contents of the conjunctival sac in many refractive cases.

DR. E. V. L. BROWN, Chicago, spoke of a case of *Bacillus subtilis* infection following a penetrating wound of the sclera. The foreign body was removed with the magnet and panophthalmitis developed. The eye had to be eviscerated and a pure culture of the *Bacillus subtilis* was obtained. The occurrence of the *Bacillus subtilis* is infrequent, but he thinks it is significant as showing that the intraocular structures are susceptible to such organisms. Roemer has contended that in sympathetic ophthalmia the eye is susceptible to certain organisms that do not affect other parts of the body.

DR. BROWN PUSEY, Chicago, said that he has some histologic sections which are most instructive. He had these with him and had hoped to show them. The sections are from the famous and unique case of Stock, and he is indebted to him and to Professor Axenfeld for them. If an ophthalmologist sees these sections and the upset condition of the conjunctiva he will realize that it is not remarkable that zinc does not effect a rapid cure. The failures spoken of from this remedy, Dr. Pusey thinks, are due to the fact that a rapid cure is expected and the treatment is not persisted in. In this form of conjunctivitis long and persistent treatment is necessary.

DR. EDWARD A. SHUMWAY, Philadelphia, said in regard to the capsule to which Dr. Sweet has referred that, while it is known that Gifford contended that it was present, Axenfeld contended that it was not, but in his last article Axenfeld concludes that although it is not demonstrable by ordinary staining methods it is probably present and may be shown by the aid of special staining methods.

DR. JOHN E. WEEKS, New York, said that the *Bacillus xerosis* is not considered pathogenic by those who have studied it. Dr. Weeks spoke of a case he followed up, in which the disease occurred in an infant of a few months. The child died and an autopsy was held. The disease presented itself as one of xerosis of the conjunctiva. The membrane was found on the palpebral and ocular conjunctiva. All the solid organs of the body were examined. From the pelvis of the kidney the bacillus was recovered and the characteristic deposit was found there. In the substance of the kidney the micro-organism was also found. From the liver also it was recovered. The bacillus was found in practically all the tissues of this infant. The child died apparently of marasmus, but it seems to Dr. Weeks very peculiar that this general infection should be found unless there is some pathogenic quality possessed by this bacillus. The bacillus has also been recovered from the urine in cases of xerosis conjunctivitis that were not fatal.

In reference to Dr. Shumway's statement that the staphylococcus has no causative relation to phlyctenular conjunctivitis, Dr. Weeks said that some years ago he made a large number of examinations of the nodes or elevations found in phlyctenular conjunctivitis, and he found that by removing the contents of these elevations carefully and aseptically pure staphylococcus cultivation was obtained almost invariably. This also occurs in the little nodules of moist eczema. Some few experiments have shown that small nodules can be produced by the introduction of the staphylococcus into the mucous membrane of the lids and also into the skin of the arm. All physicians know that in order to develop the phlyctenular process a suitable condition of the system must exist, but this suitable condition, it seems to Dr. Weeks, may exist, and in the light of these experiments permit the staphylococcus to be the exciting cause of phlyctenular trouble. It is his opinion, he said, that the phlyctenular process that occurs in connection with acute contagious conjunctivitis is due to the *Staphylococcus pyogenes aureus*, the tissue having been prepared for invasion by the local condition. It has been remarked in connection with the ulcers of the cornea produced by the diplobacillus that the staphylococcus was found. The reason is that these ulcers, originating from the diplobacillus, are infected by other organisms and the destruction of tissue is not due to the action of the diplobacillus alone, but the other micro-organisms as well.

In regard to the *Bacillus subtilis*, cases of such infection have been reported following injury, but none of them have been due to infection, without traumatism. The *Bacillus subtilis* is not infrequently recovered from the normal conjunctiva and Dr. Weeks has reported cases of this kind.

THE RELATION OF SYSTEMIC DISEASES TO THE CONDITIONS OF THE ORAL CAVITY.*

JAMES EDWARD POWER, D.M.D.
PROVIDENCE, R. I.

The importance of the study of the pathology of the oral cavity in connection with the treatment of systemic diseases is obvious, and he who is ignorant of its teachings is not only unjust to his patients, but must be regarded as a hindrance to the progress of his profession.

We often hear the study of micro-organisms referred to as the new or germ theory, and, unfortunately, not only by those who deal in glittering platitudes of which they are ignorant, but often by members of our own profession who make statements which cause us to feel that this most important part of their technical education has been neglected. The great Roman author, Varro, in his writings during the first century before Christ, called

* Read in the Section on Stomatology of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.

the attention of the world to the fact that some indefinable, invisible, living organisms were responsible for certain diseases and especially for those of an epidemic character. During the sixteenth century Leewenhoek was able to observe, through the magnifying lens of the microscope, definite outlines of these micro-organisms, and he gives a classification, the first and most important step in the scientific investigation of disease. The forms which this great scientist discovered at that time do not correspond to the forms which we find to-day. The whole world is glad to believe, however, that this error, if it may be called one, was due to the instrument and not to the man. Every effort that is being made to draw aside the curtains and to reveal the life history of these micro-organisms allows the light of science to shine more brightly and to illume the background whereon is written the name of this Swiss naturalist, Leewenhoek, the first investigator, whose successors are Pasteur, Raynaud, Lannelongue, Vulpian, Moriggia, Marchiafava, Sternberg, Klein, Miller and many others.

THE MOUTH AS AN INCUBATOR.

We can easily understand if we familiarize ourselves with the fundamental principles of bacteriology that the mouth is an excellent incubator for the development of micro-organisms, principally because it contains heat, moisture and oxygen, the conditions on which they thrive. It is true that many bacteria can not live in the mouth on account of the variations of these conditions, but it is equally true that nearly all the pathogenic or death-producing micro-organisms find in the mouth an environment, which is perfectly suited for their habitation. Miller has isolated more than 100 different specimens from the mouth.

ANTISEPTIC PROPERTIES OF THE SALIVA.

Many are under the impression that the saliva contains antiseptic properties and base their conclusions on the well-known fact that the mouth does not yield very readily to the ravages of infection. According to Miller and other investigators, the antiseptic properties of the saliva are so slight that they should not be considered in dealing with this problem. The reason that infection does not take place more frequently is that the mouth and its component parts have greater power of resistance than other portions of the body. The fact that so many kinds of bacteria do exist in the oral cavity is sufficient to satisfy the average student that the saliva does not contain the antiseptic properties which some are inclined to believe that it does. If this were so, then the bacteria would be destroyed.

MICRO-ORGANISMS FOUND IN THE MOUTH.

In neglected mouths 1,140,000,000 cultivable micro-organisms are found. The accumulation which is found between the teeth, on the shelves made by overhanging fillings, in the cavities of carious teeth, in the pockets made by malposed teeth, etc., is so mixed that it makes a most excellent medium for the growth of these micro-organisms. Even in the average mouth each drop of saliva contains 4,375 micro-organisms, among them being streptococci, staphylococci and diplococci. Flügge has demonstrated by his experiements that any explosive action of the lips, such as the pronunciation of words commencing with D, K, P and T, will expel these virulent bacteria into the air. This is sufficient evidence, or at least should be, to make us pause a moment and ask ourselves whether or not the mouths of the children in our public schools should be subjected to frequent examinations.

It is impossible for me in this brief time to point out the far-reaching influence which these little messengers of disease and death can have whose home is the oral cavity. Not only are the antiseptic properties of the saliva of the individual overestimated, but the gastric juice is also regarded as the destroyer of any germs that may be swallowed. But MacFadyan, Sucksdorf, Miller, Baumgarten and others have demonstrated that the action of the gastric juices does not destroy the bacteria found in the mouth. Sucksdorf found an average of 380,000 cultivable bacteria in one milligram of fresh feces and that 30 per cent. of these bacteria were carried from the mouth to the anus.

According to the authorities, the only time that the gastric juice has the power of destroying bacteria is when digestion is most active, two or three hours after a meal. This, one can readily understand, is the time when these micro-organisms from the oral cavity are least apt to be introduced, as most, if not all, the pathogenic organisms are carried in by the food when it passes through the mouth. Hence, it would be folly to argue that this is not also a great danger.

Of the many specimens of bacteria found in the mouth perhaps the most important are those of pathogenic type, such as diphtheria, typhoid, cholera, septicemia, pneumonia and others whose development and propagation cause in many instances a cessation of life.

Netter found that 10 per cent. of all mouths examined by him contained the *Staphylococcus pyogenes aureus* and *Staphylococcus pyogenes albus* and that the micro-organisms of pneumonia were present in 15 per cent. of healthy mouths. Schriever tells us that 75 per cent. of apical abscesses examined by him contained the micro-organisms of pneumonia, and Vulpian produced septicemia by inoculating animals with the saliva from healthy men.

From the observations and conclusions drawn from the study of diseases in our hospitals it has been proved that these micro-organisms are the principal cause in nearly every disease known to modern medicine. The pathologic manifestations vary, however, and in some instances we may find that the inflammatory process involves only the first or hyperemic stage, and in others we find manifestations of the last, or suppurative stage. In the oral cavity under these conditions we find caries and necrosis of both the osseous and muscular tissues, while in other cases the kidneys, lungs, liver, intestines, and the valves of the heart, through the lymphatic glands become involved, and in other instances and by other avenues the brain becomes involved. Indeed, it is beyond the capacity of the human mind to determine just when these minute forms of life cease to invade, cease to change physiologic to pathologic conditions, health to disease, life to death.

According to credible authority, septicemia and pyemia cause the greatest number of deaths, secondary meningitis holds the second place, having been occasioned by the inflammatory process reaching the covering of the brain (pia mater).

When we consider these statements, which are all based on fact, and when we reflect on the conditions which are so favorable to the transmigration of bacteria, such as the highly vascular tissues, the saliva, the glands, etc., with which the mouth is so abundantly supplied, does it not seem strange that more attention is not given to this part of our economy as an etiologic factor in disease? Science has proved their existence; therefore, it

devolves on us to take measures not only to destroy them, but to destroy all conditions which are conducive to their growth.

INFLAMMATIONS DURING THE FIRST DENTITION.

Perhaps the first and most common form of inflammation with which we have to deal is that which presents itself during the first dentition of the child. This is the result of pressure on the tissues caused by the tooth in trying to pass through the gum during the process of eruption. If you pause for one moment you can easily understand the processes which are taking place in the living tissues and which cause so much heat and pain. I have known of careless people who had charge of babies introducing all sorts of unclean substances into the mouths of these little sufferers during this period. It is needless to describe the effect the inflammatory condition has on the nervous system. Suffice to say that all sorts of pathologic reactions in this system, including high temperature, diarrhea, and in many cases convulsions occur. Children have come under my observation suffering from the above described conditions, after having been treated by physicians with internal remedies, which in some instances afforded temporary relief, but in all cases a reaction followed which lessened the child's resisting capacity. A crucial incision through the tissues in the area through which the tooth was trying to pass caused permanent relief. A complete cure of a large number of convulsing children during the period of dentition, and especially during the summer months, causes me to bring this experience before this Section for discussion.

When we consider the number of unclean substances, such as soiled fingers, soiled linen, soiled hard-rubber rings, and unclean soft-rubber nipples which are used on nursing bottles, we have ample reason to marvel that the mortality and sick list among these children are not greater. Along pathologic lines, it seems reasonable to assign many of the cases of inflammatory conditions of mothers' breasts to transmission by the infant.

TRANSMISSION OF DISEASE BY MOUTH.

Now, transmission of disease by the mouth is encouraged to a large degree by the adult, and in the majority of cases it is due to ignorance; for example, in the common practice of moistening promiscuously the lead in pencils, without having previously known whether they were charged with specific bacteria or not. In other instances, infection may take place when the subject may be innocent.

Miller reports an instance where several boys were inoculated with syphilis, after having been tattooed by a syphilitic, who moistened the needle used for the purpose before breaking the skin of the victim.

In one of the Russian provinces all the natives believe that any and all inflammatory conditions of the eye are due to the lodgment of foreign bodies, and the method adopted is to place the tongue between the lids of the eye to remove it. Some have become so skilled in this line, that they make a specialty of treating eyes in this way. Acting in this capacity one woman inoculated 6.5 per cent. of the entire population of the province of Wiatka with syphilis.

BACTERIA OF THE MOUTH.

Netter, Schriever and other scientific investigators have demonstrated that the dental pulp is a source of almost unlimited infection of the vital parts of our system. For instance, as a sequel of this condition we observe necrosis, diseases of the sinuses, infection of the glands of the neck, gastric disturbances and many others which time will not permit me to mention.

Miller found organisms of pyorrhea alveolaris which he called *Micrococci gingivæ pyogenes*, virulent in character. Injections through the skin of mice, caused inflammation of the part followed by an abscess which finally resulted in the death of the animal. Introduction of this organism into the abdomen of the mice causes death from peritonitis within 24 hours, the autopsy showing large numbers in the abdominal cavity.

Bacterium gingivæ pyogenes is another form of microorganism which is generally found in the mouth of a person affected with pyorrhea, as well as in the substances of a suppurating tooth pulp, and when injected into the abdomen of white mice will cause death in from 10 to 24 hours. The animals' eyes seemed glued together and the spinal column was bent almost like a bow, resembling the conditions of strychnin poisoning. Autopsy showed death from peritonitis.

Bacillus pulpæ pyogenes is still another form of animal life which is found in putrescent pulp, and which when injected into the abdominal cavity of white mice produces death in from 18 to 30 hours.

Another organism found on the superficial layers of carious dentine, called *Bacillus dentalis viridans*, when injected into the skin causes severe inflammation and in one case death from blood poisoning. When injected into the abdomen of white mice death from peritonitis ensued in 60 per cent. of the cases in from 22 hours to 6 days. In these cases, the organisms could not be found in the blood microscopically, but cultures made from the blood of the heart developed the bacteria injected.

I call your attention to the action of the micro-organisms, not to have you believe that they will produce like results in the human system, but that their action is the same, only the great resistance of our systems compared with that of mice prevents death, but the resistance is not sufficiently able to prevent an interference with the functions of the organs, therefore we have diseases of other parts, which we can reasonably attribute to the presence of these organisms in the oral cavity.

DEATHS FOLLOWING INFECTIONS OF THE MOUTH.

During the sixteenth century Vulpius in his writings states that disfiguration and death are the result of toothache, and reports the death of Gosvin Halt, the Amsterdam physician, who had his gum lanced to allow the eruption of a molar tooth. Subsequently the gum became swollen, insomnia and delirium followed, and finally death relieved him of his sufferings. This condition is what we would probably call to-day septicemia, due either to the micro-organisms being introduced into the system from the unclean instruments, or that the instruments made an avenue through which the micro-organisms, already present in the mouth, entered the system.

Zakhavevitsch reports the death of two healthy physicians, one from osteomyelitis, six days after the extraction of a left inferior second molar and another from peritonitis and osteitis. The first stage in the process of each disease was also conclusive evidence that infection was caused by unclean instruments. Banner reports many cases among them being one of especial interest, that of a young student, 24 years old, who made a visit to a physician for the purpose of having a molar tooth extracted. The physician broke the tooth in the attempt and during the next 24 hours, swelling ensued.

Finally the periostium became involved, and necrosis followed. The necrotic area was removed 14 days after; swelling continued, there were chills, great debility, rapid and marked excursions of temperature, pyemia, and finally the right lung became involved with pus, the patient died.

Delester reports several cases in which the inflammatory process spread to the brain and the patient died from menigitis.

The following case reports may be of some interest:

CASE 1.—On Dec. 4, 1905, C. N., a girl, aged 7, was referred to me by her physician. She was suffering from neuralgia involving the right side of the head, inability to sleep, loss of appetite, etc.

History.—On Nov. 30, 1905, she came home from school complaining of headache, with slight swelling of the right side of the face. Dr. H. was called and found the child with a temperature of 105° F. and other symptoms which would suggest that she was in the first stages of some one of the exanthematous diseases. He prescribed, and visited the child on the next day, expecting to find his diagnosis verified, but on the contrary the swelling had increased somewhat, with a drop of 2 degrees in the temperature. Examination of the throat revealed nothing to the experienced eye of this physician. He continued to visit the child for the next five days, keeping her as comfortable as possible, but was unable to diminish the temperature more than 1 degree. Temperature remained 102 degrees during this time.

Examination.—When I saw her she had a temperature of 102° F., with the other symptoms previously described. Her mouth seemed to be in a healthy condition, with the exception of two or three badly decayed teeth, scattered about the mouth. The child could not give the exact location of pain. On the superior right maxilla all the teeth were present, including a newly erupted sixth year molar, which was apparently healthy so far as visual and instrumental examination could determine. Anterior to this was the second temporary molar, decayed, although the decay did not involve the pulp. The condition was such as one generally sees in the mouths of children when the decay seemed to have stopped, not unlike the teeth of tobacco chewers. There was no pain associated with the examination of the decayed tooth, not even on pressure. There was, however, slight pain, when percussion was used on the permanent molar.

Treatment.—I finally decided to extract the permanent tooth, to the great disappointment of the parents, who thought that if any tooth should be extracted it should be the decayed one. Examination of the permanent molar showed unmistakable signs that my diagnosis was correct. Abscesses about the size of small peas were found at the ends of the roots. All other parts of the tooth were normal, having no cavity, not even the small fissure cavity that is present in nearly all first permanent molars. The child made a rapid recovery; her temperature became normal within twenty-four hours.

Since physicians are the ones who are generally called to see such cases, I am going to report one of many cases which I hope will show how important are the lower third molars, or what are commonly called the wisdom teeth, as factors in causing disease.

CASE 2.—On April 9, 1906, L. M. manifested the following symptoms: Severe neuralgia pains, loss of appetite, sleeplessness caused by the pain, finally swelling of the right side of the face, sore throat, and interference with the motion of the jaw, followed by fever and chills. On the second day a physician was called who evidently decided that the patient had some tonsillar infections. He increased the man's suffering by making an incision through one of the tonsils. After three days the patient discharged this physician, and called in another who found him with the described conditions increased and a temperature of 104. He immediately had the man transferred to a private hospital, where, on examination, he found an inferior third molar badly decayed, which he immediately extracted without breaking, followed by a large amount of pus. The patient experienced relief, and temperature dropped to 102. The physician prescribed mouth washes. This was on Thursday, April 6, and the man's condition remained about the same, face swollen, etc., until 3 o'clock in the morning of April 9, when patient was attacked by chills, followed by a rise in temperature of two degrees. I reached the hospital at 2 p. m.

Examination.—The face was badly swollen, the swelling involving the sublingual and submaxillary glands, neck, temporal region and ear. The patient was unable to open his mouth and was suffering intense pain. The tissues were swollen to such an extent that they were very hard and it was impossible to get fluctuation. An incision had been made near the angle of the inferior maxilla internally before I arrived, but nothing but blood came from the wound. I introduced a probe into the socket from whence the tooth had been extracted, but was unable to get any pus.

Treatment.—I advised immediate operation and the patient was etherized. The mouth was forced open with a mouth prop, then with a periosteal dissector I freed the muscles from the bone extending from the angle to the first molar tooth and down to the inferior border of the bone. The pus, which was deep-seated, now began to evacuate itself, until about four ounces were produced. I then curetted the tissues forming the inside of the cavity, which was as large as a hen's egg, washed it thoroughly with a weak antiseptic solution, and packed the cavity with sterilized gauze. I dressed the wound each day, and at the end of three days referred the patient back to his attending physician, under whose care he made a full recovery.

GLANDULAR SWELLINGS.

Swelling of the lymphatic glands of the neck is one of the diseases which, according to the observations of Odenthal, may be traced directly to conditions of the oral cavity. Odenthal examined 987 children and found carious teeth in 429, in the remaining 558 no decayed teeth were present, and in 275 cases or 49 per cent. there were glandular swellings. Of the 429 children with decayed teeth, glandular swellings were present in 424 cases or 99 per cent.

In his examinations he also established a direct relation between the extent of decay and the area of involved glands. For instance, when decay was very much marked, the glands were much swollen, when decay existed on both sides glandular swelling existed on both sides, also.

INVOLVEMENT OF HEART.

Inflammation of the valves of the heart which generally follows pneumonia, can be traced without question to conditions of the oral cavity. We find the pneumococci present in cultures taken from the affected areas of the heart, after this disease has been present, and we find them in the mouth before and during the period that the person is afflicted. Therefore under these circumstances our conclusions are fair.

Many members of the medical profession including such eminent authorities as Dr. John H. Musser, of Philadelphia, consider mouth sterilization, so far as it can be done, one of the progressive steps in the treatment of pneumonia. Musser's first step in this is to place 15 grains of calomel on the back of the tongue of the patient.

RELATION OF MOUTH INFECTIONS TO PULMONARY TUBERCULOSIS.

Leydon, Jaffe and James Israel demonstrated by their experiments that tuberculosis of the lungs may be traced directly to micro-organisms found in the mouth. Leyden and Jaffe in postmorten examinations of the lungs of an individual affected by putrid bronchitis or gangrene of the lungs showed that the micro-organisms were identical with those found in the mouth. Israel

also found a small irregular body in the lung of a patient affected by primary actinomycotic infections, which on examination proved to be a salivary calculus containing bacteria which had been inspired into the lung, causing death.

Miller reports the case of a woman of 50, who was afflicted with a long-standing insufficiency of the aorta, but otherwise in good health and enjoying a vigorous digestion. After a heavy sorrow she began to lose her appetite and complained of cardialgia which set in after every meal. She was put on slight liquid nourishment, and finally was compelled to restrict herself to tea. Repeated course of treatment with Carlsbad water brought but temporary relief. Mouth examination revealed swelling and slight ulceration of the gums; besides this, the tongue was heavily coated and the posterior wall of the pharynx somewhat inflamed. Frequent syringing of the oral cavity and pharynx and also with the iodin-myrrh tincture produced a cure in a few days, but if the patient neglected to cleanse her mouth but a single day, the old trouble would return. Miller has watched the relation between unclean mouths with swollen and inflamed gums and disorders of the stomach for many years.

A case has been reported in which a man of 50 who had always been well, suddenly became troubled by inflation of the stomach and swelling of the liver. A cure was effected by the removal of an artificial upper denture which had not been taken from his mouth, not even to be cleaned, for a period of two years.

While I have treated similar cases, I selected these of authorities, such as the men mentioned in this paper, because of the high regard which both the dental and medical professions have for their careful and scientific investigations, and I am sure these cases will have a greater influence on your future observations than any number of cases which an embryonic member of the dental profession like myself could report.

After listening to these statements which are all based on fact, and remembering that the scientist does not accept a fact until, after having a definite theory, he has taken every means to prove that his theory is wrong, we are bound as professional men to respect his records.

Therefore it is perhaps within my rights as a dentist, to call the attention of the operating surgeon to mouth sterilization by himself, to the abolition of conversation and especially of talking into the wound during a laparotomy, as a measure towards the prevention of sepsis. The surgeon should also order sterilization of the patient's mouth before the anesthetic is given as a preventative measure against the patient drawing polluted saliva or particles of calculus such as I have described into the lungs, thus preventing post-operative pneumonia.

In nearly every pathologic condition there are inflammatory symptoms which may vary from simple hyperemia to complete destruction of the part, therefore, while all conditions of oral pathology do not manifest themselves or terminate as those described, still we must admit that it is rather a question of their development than of their presence.

DISCUSSION.

DR. VIDA LATHAM, Chicago, said that what Dr. Rotch says about the ear is a good illustration that he sometimes pays little attention, and apparently does not try to reduce the number of bacteria. She hopes that the doctor will not eliminate all bacteria, because we need some special bacteria to take care of the mouth and to build up immunity and resistance to some diseases of the oral apparatus, as well as to aid in processes of digestion and oxidation.

DR. M. I. SCHAMBERG, Philadelphia, said that Dr. Power's observations have been the same as those of a number of other physicians. Dr. Schamberg stated that the more he hears such papers the more he believes that in dentistry we are often dealing with conditions in the mouth which encourage diseases, which may otherwise run a fatal course. He stated that dentists have a greater mission in the prevention of such fatal diseases than the man who takes the diseases after it has once placed the patient in a moribund state. He declares that he feels proud of the work that the dental profession is doing, especially the Section on Stomatology, in combining with medical men to show the tremendous amount of good dentistry works in the entire human body.

DR. J. E. POWER said that he recognizes the fact that we need more bacteria in the mouth. He referred principally to the disease producing bacteria, and thinks of the two, we can, perhaps, get on better without these bacteria, than the class to which Dr. Latham referred.

THE SURGICAL TREATMENT OF DUODENAL ULCER.*

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The duodenum is unique in its functions. It acts as a vestibule for the small intestine and is a meeting ground for the acid stomach ingesta and the alkaline biliary and pancreatic secretion. The four inches above this point partakes of the character of the stomach and its ills, and is more frequently diseased than any other part of the intestine of equal length, save the rectum. Duodenal ulcer is much more serious than gastric ulcer. The coats are much thinner and the danger of erosion of large blood vessels is much greater and the likelihood of sudden death from perforation make it a very fearful malady.

Its symptoms are not so frank, and, when present, are either construed as gastric or they mimic the manifestations of gall-bladder disease confusingly. It is in the operating room that the real living pathology of the duodenum is being developed, and it was in the operations undertaken for one of the other above diseases that the true cause of the symptoms was disclosed to be duodenal and thus our knowledge is being enriched and the interesting and unsusupected frequency of duodenal ulcer, in comparison with gastric ulcer, demonstrated.

Burwinkel considered the ratio between gastric and duodenal ulcer as 12 to 1. In 1896 there were but 9 reported operations. Out of 231 cases of gastrojejunostomy for ulcer, the Mayos had 119 males and 112 females, of which 158 were gastric, 60 duodenal, 14 duodenal and gastric. The duodenum was, therefore, involved 74 times, or in nearly one-third.

It has the same etiology as gastric ulcer, viz.: injury of the mucosa (75 per cent. occur in the grinding or pyloric end), anemia and hyperchlorhydria. This latter factor is evidenced by the location of the duodenal ulcer nearly always above the entrance of the common duct with the alkaline discharge from liver and pancreas, and also by the occasional appearance of peptic ulcer in the jejunum after gastrojejunostomy where the long loop was used a number of inches from the alkaline influence of the bile and pancreatic outflow. Where the short or no-loop method is used this occurrence is rarely seen.

* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.

Ewald produced duodenal ulcer in animals by the administration of HCl, 1 to 2,000. Men have a greater tendency to hyperacidity from high living. Rough food, too, with alcohol and tobacco, increases acidity.

LOCATION.

The ulcer is generally in the first four inches and above the papilla, and is particularly prone to occupy the first two and one-half inches. Mathematically it is ten times more frequent in the first than in the second part. Collin, in 262 collected cases, found 242 in the first portion. They are rare below the entrance of the common duct and cause chronic jaundice or atrophy of the pancreas.

SEX.

It exists in males in the proportion of 2.5 to 1 in females (Mayo and Graham), and Moynihan found 32 males, as against 19 females.

AGE.

It occurs more frequently between the ages of 15 and 25 in the female and from 40 to 50 in males. They have been known to occur immediately after birth. Cutler collected 8 under 7 years and 9 between 7 and 13. Chvostek found one in a baby of 3 months. The average age at death in 127 cases was 38 years. One case was sucessfully operated on by Wallis, 92 years old.

BURNS.

Formerly considerable mention was seen of the effect of superficial burns in the production of duodenal ulcer within a few days or a fortnight. Holmes and also Collin found this complication in about 12 per cent., respectively, in two groups of cases collected. It appears to be a septic infection, and since the antiseptic management of burns has come into general adoption few ulcers have been reported. Thus, Lockwood collected 138 cases treated more or less antiseptically with only one ulcer.

SYMPTOMS.

It is regrettable that ulcer of the duodenum sometimes exists without any symptoms, until a sudden and perhaps fatal hemorrhage or perforation declares its threatening existence. Morot estimates that 20 per cent. are thus latent. It may persist unrecognized and possibly symptomless during life. In 151 cases examined by Perry and Shaw postmortem, no history of the condition could be obtained in 91. The absence of symptoms is explainable on the ground of the absence of motility of the organ as compared to the stomach (Budd). The food, when it makes its transit through the duodenum, is chymified and there is no grinding there. Latency exists as long as there is no motor insufficiency, when the acidity is not above normal, and in the absence of acute or chronic perforation. Under these conditions there is no belching, vomiting or pain and the ulcer may lie unsuspected until hemorrhage betrays it.

These symptoms, if present, may be pigeon-holed under some inexact and meaningless conception of indigestion or dyspepsia as an entity with our ineffectual efforts at prescription relief. Even when one approaches the case with a just appreciation of the importance of determining the precise pathology of digestive disorders, the problem has just begun. On one hand, the similarity of the manifestation of duodenal and gall-bladder disease confronts the clinician; and, on the other, the likelihood of regarding even the suspected ulcer as gastric prevents the art from being an exact one.

The classical duodenal symptoms of pain, hematemesis and melena, if present, will unerringly lead to an early diagnosis.

PAIN.

Pain is produced by the irritation of the open ulcer by the hyperacid gastric juice and should, therefore, come on near the end of stomach digestion, or in about four hours. It sometimes occurs in two hours and may be delayed six. To put it in another way, it occurs, say, an hour before meals and is relieved by food. It sometimes occurs significantly in the small hours of the morning. It is of a burning character and located in the middle line or along the right costal border. It may only amount to a vague feeling of distress in the epigastrium. In some patients it is cramp-like and increases with intolerable severity. This colicky pain is caused by pyloric spasm.

TIME OF ONSET.

When patients complain of pain that comes on three or four hours after eating, they will frequently say that they have no inconvenience after eating; that it always occurs "just before meals," and they call it hunger pain. They also find that something taken then will relieve the pain. This is due to the fact that the pylorus closes when food is in the stomach and the hyperacid gastric juice no longer gains access to the duodenum. Thus patients will deny having indigestion and boast that they can eat anything; indeed, they do eat freely because the hyperchlorhydria gives increased ability to digest food, and the more that is taken the longer digestion is retarded and the pain delayed.

These patients, therefore, who do not restrict their food do not lose weight in the early stages and appear healthy and well-nourished. As the ulcer continues the pain becomes more constant, food fails to give temporary relief, and drugs also. The diet is then cut down and emaciation results.

As a most satisfying clinical experience Moynihan speaks of having been able to predicate the existence of both gastric and duodenal ulcers on the pain being produced shortly after taking food and causing irritation of the gastric ulcer, then abating owing to the food becoming chymified and finally producing fresh pain late in the process of digestion as the contents of the stomach are passed into the duodenum and in contact with the ulcer. He says:

> The symptoms in duodenal ulcer in many cases are perfectly characteristic and admit of an unhesitating diagnosis. I am compelled to dissent very confidently from the statement so often repeated that it is impossible to distinguish between an ulcer of the stomach and an ulcer of the duodenum. Even in those cases in which both gastric and duodenal ulcers are present, when the difficulty of diagnosis might be expected to be at its highest, a careful scrutiny of the history will generally allow a discrimination to be made between the symptoms due to the one and those due to the other condition. I do not pretend to say that in all cases the diagnosis is easy; on the contrary, in some cases it is impossible, because gastric ulcer and gall-bladder disease may both be complications in the same case. In many cases, however, a diagnosis is possible and in some is unmistakable.

Hematemesis and melena may exist singly or together. Hemorrhage from the bowels is more likely to escape detection than a small amount from the stomach. Hence, the histories of patients are misleading as to the relative frequency. It has been estimated at from 46 per cent. (Leube) to 81 per cent. (Greenough and Joslin). Both of these estimates appear to be too high if used as a basis of diagnosis. The latter per cent. was from a series of known ulcers. It is more to the point to determine, if possible, in what per cent. to expect hemorrhage in cases in process of diagnosis. Graham found 12 histories of

hemorrhage in 46 cases that proved to be duodenal, 26 per cent. In 4 other cases blood was discovered in examination of the stomach contents.

In Moynihan's 23 cases, hematemesis and melena occurred in 4; hematemesis in 3; melena in 2, 39 per cent.

The amount of blood lost sometimes proves fatal. The death rate is computed by Perry and Shaw to be 13 per cent., and by the Fenwicks at 36 per cent. Fatal hemorrhage may be attended with no hematemesis, the blood escaping by the bowel.

Melena may cause faintness and marked distension of the colon, showing a deep blue color through the intestinal walls has been observed during operation. While it is usually tarry from being partly digested from its passage through the entire intestinal tract, it has sometimes been observed to be clotted.

Hemorrhage from a duodenal ulcer does not cease spontaneously as easily and quickly as from a gastric ulcer. The pancreatico-duodenal artery may be eroded; the hepatic has been opened and also the portal vein and even the aorta. It is well known that hematemesis of serious amount may occur without any reference to previous digestive disturbance, or the indigestion that may have been present will not seem to be related in any way to the hemorrhage.

Any intestinal hemorrhage not clearly from the rectum or from disease of the heart, kidney or liver, or typhoid fever, should be looked on as suspicious of duodenal ulcer. With reference to hemorrhage Berg has formulated the following indications for operation:

1. In the presence of acute, profuse, uncontrollable bleeding, which places the life of the patient in grave jeopardy.

2. In the presence of frequently repeated bleedings, even if they are not very profuse, that undermine the patient's strength and lead to a chronic anemia.

Operation is not considered advisable when the patient's general condition is bad, the hemoglobin very low (19 to 20 per cent.) and the pulse rate very rapid. In such a case the operative shock, no matter how slight it might be, whether or not it is combined with the added depressing and hemolytic influence of a general anesthetic, may be sufficient to cause the death of the patient. It is far better in such cases to trust to internal remedies and complete rest, induced by morphin, to check the bleeding. When, however, the patient's condition is still good and the hemoglobin count is above 35 to 40 per cent., an immediate operation is strongly advised.

PERFORATION.

Free perforation of a duodenal ulcer is one of the most tragic catastrophies that can happen in the human body. It is sudden, unexpected and perhaps without the slightest premonition. An agonizing, stabbing pain in the epigastrium, followed by shock and collapse, attended with vomiting, subnormal temperature, rapid, thread-like pulse, followed by a rise in temperature, abdominal tenderness, distension and peritonitis, is the classic and ominous picture of a perforative peritonitis.

That is, perforation-peritonitis is all that can be said. Fortunately, if the condition is treated by operation promptly it is not material that it can not be diagnosed with certitude as a duodenal ulcer. It is infrequently considered duodenal in origin, even though operation is deemed necessary. Nineteen out of 51 cases collected by Weir were considered perforative appendicitis. The escaping fluid is directed to the right by the hillock of the transverse meso-colon and flows down the outer side of the ascending colon to the right iliac fossa. There the inflammatory battle is fought, and hence the similarity to appendicitis. It was diagnosed acute peritonitis 13 times, intestinal obstruction 5 times, together with the 19 considered as appendicitis. This gave 37 wrong diagnoses in 51 cases. The practice of operating on all sudden abdominal emergencies early serves to render error in diagnosis unimportant. Without operation practically all perforations of this type are fatal. Operation should be done promptly, certainly in the first 8 hours.

Notwithstanding the incision may be over some other suspected area, the finding of transparent or bile-stained fluid makes the diagnosis. It differs from gastric contents or from perforation elsewhere in the intestinal tract. The perforation is more difficult to close on account of the deep-seated location and immobility of the viscus. Linen purse-string or Lembert suture is the most effective. Gauze drainage should never be allowed to rest on the suture line.

If the perforation is recent, sponging the area is preferable. Many men do not irrigate at all, relying on local cleansing and drainage by large tube over the symphysis. Indeed, Murphy strongly advises against irrigation in generalized peritonitis, claiming that it disseminates the infection, is time-consuming and prolongs the anesthetic; that it is the confinement of pus under tension that is the dangerous feature, and drainage and the upright position (Fowler's position) are the essentials. He has saved 23 out of 24 cases of suppurative peritonitis by this treatment. I have followed this plan in four advanced cases recently with success. One had subnormal temperature and pulse of 140 and appeared wellnigh hopeless.

There is a temptation to irrigate the cavity, and the practice, while not as generally adhered to as formerly, still has ardent champions. (See discussion in London *Lancet* between Mr. Bruce Clark and Messrs. Turner and T. Crisp English. The latter defend it stoutly and have saved 9 out of 12 cases with it. Moynihan saved 5 out of 7—no irrigation.)

English collated 50 cases of operations for perforated duodenal ulcer, with 50 per cent. mortality. This has been reduced greatly in individual series, and is perhaps generally not over 20 per cent. It should and can be brought much lower by prompt operation, speedy suturing, no irrigation, suprapubic drain and Fowler's position. It has been suggested to administer methylene blue before operation to aid in the detection of the perforation. No attempt should be made to excise the ulcer. Whenever the condition of the patient does not forbid, gastroenterostomy should be performed at the time to allow the ulcer to heal. Moynihan was able to do this only in 2 of his 7 cases.

Chronic perforations resulting in localized peritonitis and adhesions are very common in duodenal ulcer on account of its shattered position and close proximity to other organs. This gives rise to sharp attacks, the relics of which persist and give chronic pain and digestive disability. The implication of the gall bladder in the adhesions imparts a gall-bladder syndrome, and these are the cases that are so difficult for exact definition.

The following points by Graham help to differentiate gallstones from duodenal ulcer:

Pain in cholelithiasis is often sudden, severe, has a wide field of radiation, comes absolutely irregularly, is independent of and not eased by food, nor so often traced to it. No stomach history is given between the short, precise spells. Spasm of the diaphragm is nearly always observed, and vomiting and gas are present only during the attack and the relief through vomiting and gas eructation is not as certain. The vomit is usually scanty, yellow and bitter, and acidity is extremely rare.

In duodenal ulcer the pain comes in decided periods of at-

tack, may be and often is sudden, has a very limited field of radiation, may be irregular as to time of separate attacks, but regular as to the taking of food. It is dependent on food, being early eased, and later pain returns. The history of gas, vomiting and acidity runs parallel to the periods of pain. No spasm of the diaphragm occurs except in some cases of perforation. The vomiting and belching are usually decided in quantity and quality and followed by relief.

There will always remain a certain proportion of cases that will mislead the careful physician. Those gallstones where the stomach symptoms of gas distress, sour belching and dilatation predominate, and pain is but little complained of (and that only of a dull character), will usually be diagnosticated as ulcer; where the duodenal case whose chief symptom is the sudden, sharp, intense pain of perforative but localized peritonitis, and where, with no obstruction and hyperacidity, the other stomach symptoms are in abeyance, will fall to cholelithiasis. Such error in diagnosis does not militate against the clinician, as both conditions are purely surgical and the differentiation in many cases must be made on the operating table.

TREATMENT.

In the acute ulcer or erosion of young anemic females, manifested by slight bleeding usually, the well-known dietetic treatment yields very satisfactory results. In the indurated or chronic ulcer which is prone to perforation in middle life and more frequently in men, medicinal treatment is very disappointing in the permanence of cure. It is to this class of persistent sufferers, where relapses have occurred and where the pain and discomfort interfere with the conduct of life, that operation has been so brilliant. This is especially true in pyloric or duodenal obstruction, even though the ulcer is healed.

Surgery should be kept strictly within the limits of a mechanical appliance. It can not be asked to act in any miraculous or mysterious way. The indication is solely for better drainage of the stomach, and at a point where the food and acidity will not have to pass over and irritate the ulcer. It is the old principle of rest. The operation which accomplishes this best is posterior gastroenterostomy without a loop and the incision in the stomach being from right to left, as recently devised by Mayo. Theoretically, also, it is a good thing absolutely to obstruct the pylorus and thus give the ulcer immunity. This can be done in connection with gastroenterostomy by cutting through the pylorus and closing each end by suture or by surrounding it with a moderately tight construction of silver wire (Fowler). This would stop the food current, but not cut off the circulation. Practically, however, this step is rarely employed by the masters who have perfected this work.

THE HOUR-GLASS DUODENUM.

A PLEA FOR A MORE EXTENDED USE OF PLASTIC SURGERY TO PRESERVE THE DUODENAL ROUTE.*

KENNETH A. J. MACKENZIE, M.D.
PORTLAND, ORE.

Only the most casual reference is made in literature to the deformities of the duodenum, and when the pyloric end of the stomach is the seat of intrinsic obstructive disorders the pylorus is almost invariably referred to as the seat of the obstructing cause.

In these later days of gastric surgery there is evident a growing sense of appreciation of the important rôle played by the duodenal ulcer in causing obstructive disorders of the stomach, and more critical analysis of the distribution of the so-called peptic ulcer tends to demonstrate an increasing ratio of duodenal ulcers. The tardy discovery of this fact is easily explained by the vaguely defined symptom-complex of the duodenal ulcer. During the last eight years I have operated on four cases of the so-called acute abdomen and discovered perforated duodenal ulcers.

In all these cases but one, the most careful canvass of the personal history failed to reveal any sign or symptom of the disease in question, and the one patient noted as an exception complained only of constant pain in the back and six or eight

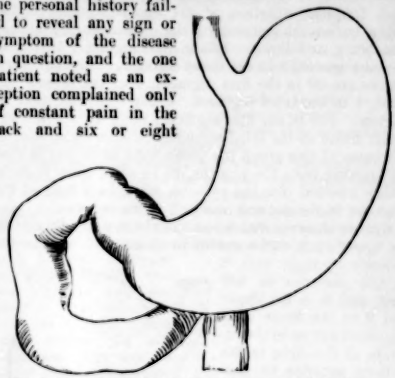

Fig. 1.—Showing normal outlines of stomach and duodenum.

years previously had one attack of melena. All these patients died. The fact is merely mentioned as an index of a larger range of cases than is commonly supposed to exist, and gives mute testimony to the value of more careful clinical study and its corollary, an earlier resort to surgery.

In a statistical review of the incidence of gastric and duodenal ulcers in the service of St. Mary's Hospital, Rochester, Dr. W. Mayo,[1] in a paper read at the Portland session of the American Medical Association, made the following observations. For convenience I quote his own words:

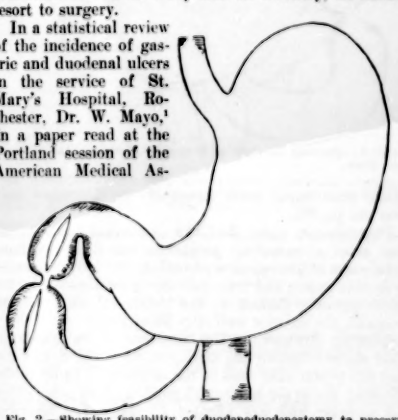

Fig. 2.—Showing feasibility of duodenoduodenostomy to preserve duodenal route.

We have thought it wise to narrow the limits of the study to the consideration of only the last two and a half years, from Jan. 1, 1903, to July 1, 1905, and also to consider only the cases subjected to gastrojejunostomy, excluding all the ulcers

* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.

1. THE JOURNAL A. M. A., Oct. 21, 1905.

excised or subjected to Finney's operation, pyloroplasty, etc.

This gives us 231 cases, 119 males and 112 females, of which 115 were gastric ulcers, 60 duodenal, and 14 duodenal and gastric. Twenty of the duodenal ulcers extended up to and involved the pylorus. In other words, out of 231 gastric and duodenal ulcers the duodenum was involved 74 times, 58 times in males and only 19 times in females. The percentage of duodenal ulcers being 32.

According to the observations of Perry and Shaw, the most frequent situation of the duodenal ulcer is the upper horizontal segment of the duodenum. Distribution being as follows: 123 in first segment, 16 in the second segment, 2 in the third segment. Oppenheimer's figures are 69 in the first segment, 8 in the second segment, 4 in the third segment. Collin's estimates are as follows: 242 in the first segment, 14 in the second segment, and 6 in the third segment. Collin states that in 162 cases of this group the ulcers were from two to four centimeters from the pylorus, in 74 cases close to it, in 4 they reached into the pylorus, while in 2 half of the ulcer lay in the stomach and half in the pylorus.

Krause observes that when the ulcers were situated in the upper horizontal segment in 38 cases 15 were in the anterior or right wall, 6 in the posterior or left wall, and 8 in the upper and 9 in the lower wall. Oppenheimer gives the relation of the right to the left or anterior to posterior wall as 18 to 16. According to Boas, the ulcers were found more frequently in the inner wall near the papilla.

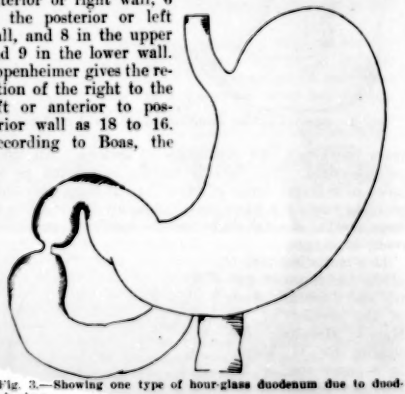

Fig. 3.—Showing one type of hour-glass duodenum due to duodenal ulcer.

Pagenstecher states that the duodenum has only in rare cases a mesentery proper on which it lies free. Both cases of hour-glass contraction, which I shall refer to in this paper, had free, movable mesenteries. In the third segment, fixation to the abdominal wall is more constant, the anterior wall only being free.

Quoting Brunner: "The situation of the duodenal ulcer shows relatively the same relation to the duodenum that the peptic ulcer does to the stomach." In 62 ulcers affecting the upper horizontal portion of the duodenum the anterior wall was affected 38 times, the posterior wall 9 times, and the inferior wall 15 times.

All authorities are agreed that the duodenal ulcers are more prevalent among males than females.

In the contemplation of surgical measures for the relief of intrinsic obstructive disorders of the pylorus and duodenum the teaching of physiology should receive the most thoughtful consideration of the surgeon, and it should be laid down as axiomatic that the duodenal route should be selected in all cases in which it is possible.

A review of the physiologic reasons for the selection of the duodenal route will not offend the senses of an assembly of surgeons who, if true to the traditions of their profession, will always hail with approval the finger posts of physiology and anatomy.

It would appear of most vital consequence to the health and well being of all individuals that the food that enters the stomach should cross the pyloric threshold and traverse the entire length of the duodenum. The course is short, but a quick review of the events that succeed one another in the duodenal cycle of digestion carries with it logic that is almost irresistible.[2]

The following findings are taken from a recent article by Cannon:[2]

The food enters the stomach and is gathered in the cardia which acts as a reservoir. . . . The gastric peristaltic wave is confined to the pyloric portion which acts as a mill, churning the food and propelling the chyme by jets through the pyloric orifice. . . . The cardia possesses a selective function and retains the proteids long enough to receive their proper treatment by the pepsin ferment and hydrochloric acid, while the carbohydrates are forwarded quickly and without delay into the duodenum, to be treated by their respective ferments.

Free acid in the stomach is the signal for relaxation of the pyloric sphincter. The pylorus opens and the acid chyme passes into the duodenum. . . . The presence of the acid chyme in the duodenum is the signal for the pylorus to close and the pylorus remains closed until the acid chyme is neutralized by the alkaline pancreatic secretion.

Fig. 4.—Showing another type of hour-glass duodenum with decided duodenal pouch, illustrating proposed plastic operation for its relief; duodenoduodenostomy.

The transit of certain foods, and certain foods only, across the duodenum excites the flow of bile. . . . The bile flow excites the pancreatic enzymes and generates the fat-splitting ferment which possesses three-fold strength in the presence of bile. . . . The bile stops the action of the pepsin which is destructive to the action of the pancreatic ferments.

The presence of acid foods in the duodenum closes the pylorus and originates the segmenting movements in the small intestine and especially in the duodenum, which mingles the food with the pancreatic and biliary juices and initiates the work of active absorption.

These are the common truths of physiology, established beyond peradventure by the most refined experiments in foreign and domestic laboratories.

The question naturally suggests itself, Does modern surgery in the gastric field obey the behests of modern physiologic dogma, or are they more honored in the breach than the observance? Can the highly organized,

2. American Jour. of Med. Sciences, April, 1906.

vital and complex functions of the duodenum be safely ignored in any operation in this field? Is the substitution of the jejunal for the duodenal route fraught with mischief or do adjustments take place after gastroenterostomy so that the digestive cycle of the duodenum continues despite the duodenal cut-off? It would appear from the most elementary reasoning that any operative measure that cuts out the duodenum from its special rôle in the digestive act possesses serious drawbacks and disadvantages (Fig. 1).

Personal observation of many cases of gastroenterostomy convinces me that a very considerable number of cases suffer afterward from various disorders and that their sufferings do not commonly diminish with time. It is admitted, of course, that in many instances the last condition of these patients is infinitely better than that which first demanded the measures of relief offered, and that it is very often the only recourse left for the surgeon. They are by no means doomed, but they are often marked and in the deep seams of their faces will often be found the anastomotic line. It is far from my thoughts to diminish the halo of splendor that surrounds the achievements of surgery in this fertile field of work.

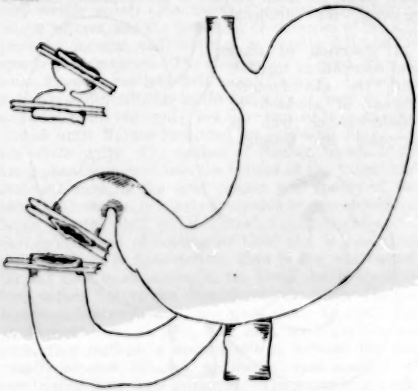

Fig. 5.—Showing feasibility of partial duodenectomy, followed by duodenorrhaphy to preserve duodenal route.

This argument leads me to make a special plea for the expansion of plastic surgery in order to preserve intact the duodenal route for the following reasons: First, the peritoneal investments and the liberal circulation of the parts make it an ideal field for plastic surgery; second, plastic surgery aimed to maintain intact the duodenal route will always furnish the best results; third, plastic surgery in the region of the stomach and duodenum for the relief of stenosis has not yet been sufficiently exploited and has not been accorded its due place in surgery; fourth, the best outlet for drainage of the stomach under all circumstances is furnished by the pylorus and the duodenal route; fifth, plastic surgery permits regional inspection, aids diagnosis and guides the surgeon in the performance of the most conservative work (Fig. 2).

The title of this paper was not selected because it fits the theme, but because the study of two cases in which the hour-glass contraction of the duodenum was first discovered by me suggested it.

Very recently two cases of hour-glass contraction of the duodenum came under my observation in my service in St. Vincent's Hospital, Portland, Oregon. I had never seen a case of this kind before, and I have been unable to find anything in the literature corresponding to it.

CASE 1.—This patient I have observed personally for nearly twenty-five years. Dr. Bevan, if a remember rightly, saw the man in consultation with me fifteen years ago.

Patient.—Male, aged 66. He has a long history of acid dyspeptic, digestive pain, and on six or eight occasions severe hematemesis. Diagnosis was made of peptic ulcer. He was passed from hand to hand and was cured by diet and drugs a great many times.

Present Illness.—I met him on the street recently and he presented a picture of extreme marasmus, without cachexia. There was no pain, but every two or three days he evacuated his stomach of gallons of grumous fluid.

Examination.—This revealed gastrectasis, extending to the iliac crest. The outline of the stomach was visible through his attenuated abdominal wall. No tumor.

Operation.—Operation was advised and performed Feb. 28, 1906, at St. Vincent's Hospital. Section revealed a most perfect type of hour-glass contraction, faithfully portrayed in Figure 3. The duodenum was freely movable, free from adhesions and possessed a free mesentery. There was a small pyloric pouch. Pyloric ring was normal and there was no sign of ulcer of the stomach, past or present.

Posterior gastroenterostomy, following method of Mayo, was done. The patient recovered, returned to his home on the eighth day, and was downstairs on the tenth. Results were extremely satisfactory. The remaining signs are so slight as to be insignificant, but enough to make him conscious of the possession of a stomach.

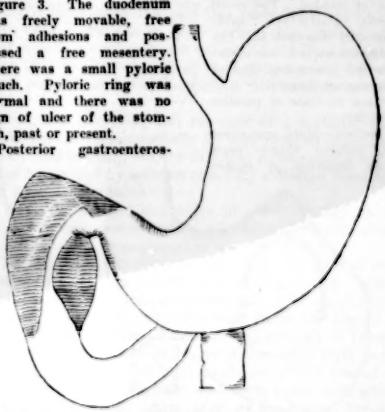

Fig. 6.—Illustrating pyloric and duodenal thickening (benign), result of chronic duodenal ulcer, relieved completely and permanently by duodenoplasty. Note open pyloric ring.

CASE 2.—German, aged 58.

History.—This man complained of gastric misery, vomiting, melena on two occasions and hyperchlorhydria extending over a period of fifteen years. Aspect was anemic, but was not cachectic.

Operation.—Abdominal section revealed duodenal stenosis about one and one-half inches from the pylorus. The pyloric ring was free and patulous. There were a few adhesions about the duodenum. There was hour-glass contraction, with large duodenal pouch on the proximal side (Fig. 4), capable of containing at least one ounce of fluid. For want of proper clamps I had to do free-hand posterior gastroenterostomy. Results were satisfactory, notwithstanding troublesome vomiting, which lasted for three or four days. While greatly relieved, the man still complains of distress in the stomach.

At this stage of my theme I venture to express the

thought that the ultimate results would have been better if I had performed plastic operations in both these cases to maintain inviolate the duodenal route (Fig. 5).

Because they possess many characters in common and bear closely on this argument, the following cases are included in this study:

CASE 3.—Mary M., aged 76.

History.—This woman gave a long history of gastric pain, sour stomach, vomiting, hematemesis and melena.

Examination.—There was extreme emaciation, great debility, no cachexia. A movable tumor could be felt to the right of the median line. There was extreme gastrectasis.

Operation.—Abdominal section revealed pyloric thickening without adhesions. The pylorus and duodenum were freely movable. The pyloric ring was patent. Most of the thickening was on the distal side of the pylorus. There was stenosis of at least one and a half inches of the duodenum. The thickened portion resembled a segment of cylinder. The anterior surface of the duodenum was soft and pliable (Fig. 6).

For the relief of this case the Heineke-Mikulicz operation was performed. The incision was carried over the anterior surface of the duodenum, beginning beyond the zone of thickening, across the pylorus and into the stomach. The incision was two inches in length and was sutured at right angles to line of incision. The result was faultless. In two or three weeks gastrectasis spontaneously disappeared. The patient survived the operation five years and died of intercurrent disease.

CASE 4.—Case of peculiar severity.

Patient.—Male, aged about 70, suffered thirty years from condition of violent gastric pain. There were repeated moderate hemorrhages, and persistent acid and bilious vomiting. Facies betrayed most intense suffering, there was marked emaciation and a cachectic aspect.

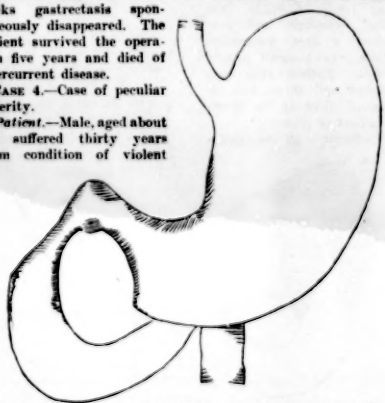

Fig. 7.—Showing extensive stenosis of duodenum, pylorus open, suitable case for duodenectomy and duodenopylorostomy or duodenogastrostomy.

Operation.—Abdominal section. Visceral adhesions were universal. The pylorus and duodenum were fixed. The pyloric part of the stomach was greatly thickened and distorted. The pyloric ring was moderately stenosed. There was a concave depression over the posterior and anterior surface of first part of the duodenum. The duodenal lumen was constricted for one inch or more. The central portion was almost occluded. There was moderate gastrectasis (Fig. 7). A posterior gastroenterostomy was done. Immediate recovery ensued. The patient remained three weeks in hospital and had gained fifteen pounds in weight when he left. After six weeks he suddenly developed persistent bilious regurgitant vomiting and died of exhaustion before he could be brought back to the hospital for relief.

CASE 5.—E. G., aged 38, had had a gastric disorder of six years' duration, with hyperchlorhydria and vomiting. There was no record of hematemesis or melena and no pain except in the lumbar region. There was positive gastric insufficiency with moderate gastrectasis.

Operation.—The pylorus was free and movable; there were no adhesions. There was a wedge-shaped retraction of the upper wall of the duodenum. The pyloric ring was patulous. An incision was made over the anterior wall of the duodenum up to but not including the pyloric ring and extending beyond both ends of the constricted part. It was sutured at right angles to line of incision. Recovery ensued; the result was practically perfect.

The operation performed in this case was duodenoplasty, not pyloroplasty (Fig. 8).

CONCLUSION.

The study of these few cases warrants the following inferences:

1. Duodenal ulcers are marked by great chronicity.
2. They result in deformities of the duodenum and stenosis after many years' duration of the ulcer.
3. The most perfect results of operation are found in those cases in which the duodenal route has been preserved by duodenoplasty.
4. Duodenal ulcers result sometimes in hour-glass contractions of the duodenum and kindred deformities.

The study of this very insignificant remnant of cases suggests the use of the following plastic operations for their relief, the main purpose of the operations being to preserve the duodenal route:

1. Resection of scars and coarctations together with the ulcer-forming regions of stomach or duodenum or both as proposed by Rodman; apposing by plastic devices the divided parts, always striving to preserve the duodenal route. (The plastic principles of Billroth, Wolfler and Kocher.)

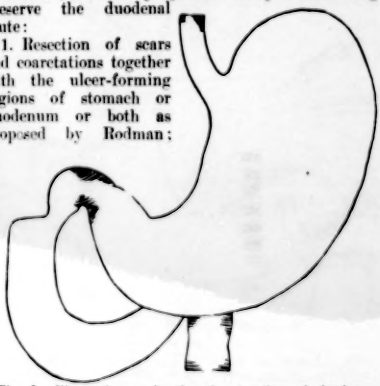

Fig. 8.—Illustrating wedge-shaped retraction of duodenum or saddle-back deformity, suspectible to plastic operation. Pyloric ring open; relieved by duodenoplasty.

2. Pyloroplasty after Heineke and von Mikulicz.
3. Pylorolasty after Finney.
4. Duodenoplasty.
5. In suitable cases partial duodenectomy or partial resection of the duodenum followed by duodenorrhapy by suture or mechanical device.
6. In hour-glass contraction of the duodenum or kindred deformities duodenoduodenostomy by means of a clamp and suture or by plastic device or the McGraw ligature.
7. In pyloric stenosis involving the pyloric ring, partial pylorectomy followed by duodenogastrostomy by clamp and suture or mechanical device.
8. In stenosis limited to the beginning of the duodenum as in Case 6, partial duodenectomy followed by duodenopylorostomy or duodenogastrostomy.

9. In all cases unsuited to plastic measures above outlined, gastroenterostomy.

10. And, because it is held doubtful that the artificial opening will be permanent in the presence of a patent pylorus, any of the above-mentioned operations or combinations of them preliminary to or part of the operation of gastroenterostomy.

508 Dekum Building.

THE TREATMENT OF BONE CAVITIES.

REPORT OF A CASE OF COMPOUND COMMINUTED FRACTURE OF THE HIP, FOLLOWED BY BONY UNION AND A MOVABLE JOINT.*

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MINNEAPOLIS.

I have had so many inquiries concerning an article on the treatment of bone cavities published in THE JOURNAL, May 20, 1905, that it seemed that a brief paper on the same topic might interest the members of this Section.

The obliteration of dead space in the soft tissues is a very simple matter since we have learned to use buried catgut sutures, and the treatment of abscesses of the soft parts by incision and drainage is usually followed by speedy convalescence. The obliteration of dead space in bone, however, has been very unsatisfactory. In fact, it has been so difficult that in the majority of cases we have not tried to fill the cavity, but have treated it as an open wound until Nature furnished an epithelial lining for the whole cavity. The method of Neuber, in which the integument is turned into the bottom of the wound and fastened there, is the most certain and speedy of the older methods, but it is only applicable to very superficial bones, like the tibia, and it leaves a most unsightly scar. Schede's method of healing by blood clot is even more unsatisfactory in bone cavities than in the soft tissues, because even when successful the blood clot is absorbed long before Nature can furnish new bone, and the integument is drawn in, leaving a bad scar. In septic and tuberculous bone cavities, and most bone cavities are such, this method is unsatisfactory, because the clot usually becomes infected, no matter what methods of sterilization have been employed. The prevailing method is to pack the cavity with gauze until it is filled with connective tissue and covered by epithelium, and is about the most tiresome and unsurgical procedure surgeons are guilty of. I have one patient who calls on me occasionally now, on whom I performed a sequestrotomy two years ago and treated after this method. He packs his wound himself, and still has a small point deep in the wound without an epithelial covering. Since that time I have learned how to fill bone cavities, and even those operated on but a short time ago are healed, and the healing process has not been accompanied by the tortures of pulling out and putting in gauze. The treating of tuberculous cavities in bone by packing is eminently unsatisfactory, because it is not only tedious and painful, but very commonly unsuccessful, the granulations becoming infected by the tubercle bacillus.

FAULTY TECHNIC.

While our lack of success in the treatment of bone cavities is, in a measure, due to the physical make-up of the tissue, it is largely due to faulty technic, for the technic of bone surgery has not kept pace with that of surgery of the soft parts. The consequence is that many cases of bone disease have been neglected. It is too common a practice to treat an abscess in the end of a long bone by means of braces and plaster splints until it breaks into the neighboring joint; and this is termed conservatism by those who practice it.

MacNamara's book on "Diseases of the Bones and Joints," published in 1887, is the best book ever written on bone surgery, but it makes no mention of an artificial filling for bone cavities. In 1888, Gerster published his excellent book on "Aseptic and Antiseptic Surgery," in which he advocated the filling of bone cavities by blood clot after Schede, but he made no mention of an artificial filling. Later Senn advocated the use of decalcified bone chips, dusted with iodoform, for the filling of bone cavities. The interspaces between the chips were allowed to fill with blood clot, as in the Schede method. This was the first successful method of artificial filling and was a decided advance, but was too often followed by failure to become popular.

MOORHOF'S BONE WAX.

My experience in the past two years leads me to believe that a new era in bone surgery has dawned and that we can secure so much better results than we have been able to heretofore that bone surgery will become more popular, and that the technic will improve accordingly.

Surgeons have long felt the need of a material with which they could successfully fill bone cavities as dentists fill cavities in teeth, but the filling of a bone cavity which must be covered by soft parts is very different from filling a cavity in a tooth.

With our present knowledge of infection and its results it is easy to understand why all experiments along this line in preantiseptic days were failures.

In 1903, von Mosetig reported a large number of successful results from the use of a new bone plug. Moorhof also reported many successes with it in his clinic at Vienna. In this country it is very commonly known as Moorhof's bone wax. This material consists of twenty parts iodoform, forty parts spermaceti and forty parts of oil of sesame. The ingredients are slowly heated to 100 C. and, when allowed to cool, form a soft solid which remains solid at the temperature of the body. For use it is heated to 50 C., being constantly stirred to keep the iodoform evenly distributed. At this temperature it can be poured into the cavity, where it immediately solidifies. The material does not act as a foreign body, nor does it act as a culture medium. It possesses the inhibitory and medicinal properties of iodoform, without causing iodoform poisoning. Its physical properties are such that it is gradually absorbed and replaced by granulations, and finally by new bone. Moorhof shows many skiagraphs illustrating this process.

The wax, or bone plug, as its inventor terms it, has demonstrated beyond all controversy the feasibility and practicability of an artificial filling for bone cavities.

After the average operation at the present time the surgeon expects to close the wound and to have very little to do in the way of after-treatment, and he is inclined to neglect cases where this agreeable program can not be carried out. With this artificial means of filling dead space in bone, the after-treatment in cases of bone surgery need not be disagreeable or prolonged.

In acute infections of bone there is no place for an artificial filling, because the parts can not be sterilized,

* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-seventh Annual Session, June, 1906.

but, fortunately, it is not needed when the operation is performed early, as it should be, because there is no great loss of bone substance and Nature promptly makes good the defect after drainage is established. When these acute cases are neglected, or when the process is so acute as to cause speedy necrosis, there comes a time when the necrosed bone must be removed, leaving a bone cavity to be filled.

TECHNIC.

The preparation of the cavity is the first step. The bloodless method must be employed so that the cavity can be made sterile and dry. When the bone wax is to be used, the opening in the bone need not be larger than is necessary to permit the removal of the sequestrum and the thorough cleansing of the cavity. The periosteum must be carefully preserved, as it makes an important covering for the bone plug. After removing the sequestrum and thoroughly curetting out all débris, the cavity must be washed and dried and thoroughly swabbed with 95 per cent. carbolic acid. After about two minutes the acid should be wiped out and the cavity washed with alcohol, after which it must be thoroughly dried, as moisture will prevent the melted wax from penetrating every crevice in the bone, which is necessary for the success of the treatment. Moorhof has a hot-air blast for drying the cavity, which is a great advantage, but not a necessity. The melted wax is then poured in and as soon as it is hardened the periosteum and other tissues are closed by catgut sutures, a dry gauze dressing is applied and held snugly in place by a roller bandage, after which the rubber bandage is removed. When there is a good periosteal covering no drainage is necessary, but when the soft parts come in contact with the wax it is advisable to provide temporary drainage by means of strands of catgut or small strips of rubber tissue. In most cases, when no drainage is necessary, primary union is secured, but in a few there will be some oozing of serum between the stitches for a few days, after which union takes place. In drained cases union usually takes place soon after the removal of the drain, but occasionally serum and particles of iodoform escape for some time after; but so long as the wound is kept sterile all goes well. Even when the wound becomes infected the infection is superficial and it is in a better condition than if it were being treated by gauze packing.

The first case reported in my former paper was that of a boy who had an ankylosed elbow from a badly united fracture. I opened the joint, trimmed the displaced condyle with a knife and filled the space with the bone wax. The boy now has perfect motion in the joint.

I have found that when the wound is so situated that immediate closure is impossible the wax may still be used to advantage. In one case the patient had a chronic abscess in the lower jaw from an ulcerated tooth. The tooth was extracted, the abscess opened and disinfected and the cavity filled with the bone wax, and, although a portion of the wax was exposed inside the lower lip as large as the end of a lead pencil, the result was perfectly satisfactory. The patient reported three months later with the opening closed. She stated that she thought the wax all came out, but so slowly that by the time it was out the cavity was filled.

In old cases in which there is loss of soft parts so that the wound can not be closed, the cavity can be curetted, disinfected and filled with wax which will sometimes remain under a dry gauze dressing until it is gradually absorbed and replaced by granulations. When the wax comes out, as sometimes happens in these open cases, the cavity can be resterilized and again filled with wax which makes a very much better and more comfortable dressing than gauze packing.

CHRONIC BONE ABSCESS.

Chronic bone abscess which has too often resulted in amputation can be successfully and comfortably treated with the bone wax by evacuating the pus, sterilizing the cavity, filling it with the wax and closing the periosteum and soft parts over it.

I have filled the cavity after excision of the elbow in two cases with most gratifying results.

When a pyogenic infection of bone threatens the integrity of a joint, surgeons promptly operate to save it, but a tuberculous focus in the same locality is very commonly neglected and treated by so-called conservative methods until the joint is invaded. A tuberculous focus in bone near a joint, although not so rapid in its course as a pyogenic infection, is just as great a menace to the soundness of the joint and should be treated in the same manner. The bone should be opened, the focus scraped out, the cavity swabbed with carbolic acid, followed by alcohol, filled with wax, and the periosteum and soft parts closed over it. Treated in this manner, a local tuberculosis is speedily curable. This treatment is not open to the objections of gauze packing. It saves the joint and is followed by speedy convalescence.

My greatest victory with the use of the bone wax was in a compound comminuted fracture of the hip joint in which I secured bony union and a movable joint.

Patient.—E. E., aged 26, was referred to me by Dr. A. Ridgway, Belgrade, Minn., Jan. 17, 1905.

History.—On January 16, while hunting, he was accidentally shot with a shotgun. He was at such close range that the shot acted as a large bullet. It entered from behind, passing through the trochanter and neck of the femur, opening the joint. Dr. Ridgway packed the wound with gauze as a temporary dressing and to control the hemorrhage.

Examination.—When he arrived at the Northwestern Hospital all the usual signs of fracture of the neck of the femur were present, including one and one-half inches shortening. The wound was large and ragged. Gun wads and parts of clothing were found deep in the thigh, where they had been driven directly through the bone.

Treatment.—The shot, fragments of bone and other foreign bodies were removed, the wound cleansed, packed with gauze and the Maxwell dressing for fracture of the neck of the femur applied, that is, the usual weight and pulley were placed at the foot of the bed and a side pull from the upper and inner side of the thigh upward and outward at an angle of about 45 degrees, with a 10-pound weight, which made the joint capsule taut and held the short fragment in place. The wound was treated by gauze packing for two weeks, when the temperature disappeared. The gauze was then removed, the cavity disinfected by 95 per cent. carbolic acid, followed by alcohol, and filled with bone wax.

Result.—At the end of seven weeks the wound was closed, the weights removed and the patient allowed to sit up. At the end of the eighth week he went home, using crutches and bearing some weight on the limb. He began his usual work on the farm on August 1. October 20 a small piece of bone came away, and since then he has had no trouble. He now has good use of the joint and walks without any artificial aid save an inch lift on the heel of his shoe.

AUTHOR'S EXPERIENCE.

In my two years' experience with the bone wax I have demonstrated many times that it is all that has been claimed for it, and have been gradually extending its use to new fields, but with all its advantages it is not perfect. The principal objections to it are that it is expensive and the iodoform settles to the bottom while

the oil floats on top in the liquid state. One physician tells me that he paid ten dollars for enough to fill one large cavity. The iodoform is the objectionable ingredient both as to price and consistence, and I question its real value. It is used, of course, for its antiseptic and inhibitory properties, but these are probably due to the iodin set free in the process of absorption. I have been experimenting with a number of different mixtures with a view of eliminating the objectionable features and have met with some very gratifying results. At one time all surgeons used iodoform very freely as an antiseptic and continued to use it for this purpose until bacteriologists taught them that it would be wise to sterilize it before using, as it very commonly contains bacteria.

EXPERIMENTS WITH SUBSTITUTES FOR IODOFORM.

In my experiments I have acted on the belief that iodin is the active agent in the bone wax above described, and that it would be better to use the iodin flakes than the iodoform, because they are soluble and so little is required that the expense is trifling.

At my request Dean Wulling, of the College of Pharmacy of the University of Minnesota, had his assistant, Mr. Beckman, work out the formula. I suggested various ingredients, always with 1 per cent. of iodin as the antiseptic, stipulating that the melting point must be about 110 F. This strength of iodin was adopted because it has proved so eminently satisfactory in the sterilization of catgut. The following is the most satisfactory combination in our experience:

Spermaceti, 8 parts.
Olive oil, 2 parts.
Iodin, 1 per cent.

The spermaceti is melted at a low heat on a water bath and the olive oil added. The heat is withdrawn and the iodin dissolved in the liquid and stirred until it congeals. Heat must not be used after the iodin is added on account of its volatility.

This mass is solid at the body temperature, melts at 108 F., and is antiseptic without being irritating.

I have only recently completed this work and have not had sufficient experience with it to justify any extravagant claims. It is mentioned with the hope that others may take the matter up and, now that the filling of bone cavities by artificial means is proved to be practical, we may discover a perfect material.

THE MEDICAL TREATMENT OF GALLSTONE DISEASE.*

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If one should formulate his conclusions from the reading of current medical literature, he would likely be of the opinion that my paper would be, of necessity, an extremely brief one. However, voluminous as is the surgical literature on gallstones, a careful consideration of the subject leads me to place surgery as adapted only to gallstones of gall-bladder origin, and then only under conditions which demand mechanical relief—obviously a very small part of the subject of gallstone disease which is almost entirely medical. When we consider that postmostem records prove that from 6 to 10 per cent. of all cadavers show the presence of gallstones—three-quarters of these being in persons over 40 years old—and that not more than one person in twenty who carries a gallstone becomes aware of its presence through any symptoms which it may cause, and of those whose symptoms have attracted attention, not all require operation, it is readily seen that the field of surgery is decidedly limited, although of great importance when it is indicated. In other words, the treatment of gallstone disease is practically entirely medical; that of gallstones themselves is generally surgical. If this distinction is kept clearly in mind, more will be expected of the internalist and fewer disappointments laid at the door of the surgeon.

ETIOLOGY.

To present this question intelligently, let me premise that gallstones are either (1) hepatic in source, originating in the bile ducts, because of a slow catarrhal process which results in the secretion of an albuminous substance which, in combination with the bile, precipitates a bilirubin-calcium calculus, or (2) are formed in the gall bladder, because of a catarrhal process of low grade which induces a secretion of cholesterin from the mucous glands and cells in its walls. Of these, the former is by far the most frequent. These facts also explain why, after a cholecystotomy has been performed, gallstones continue to be discharged from the fistula for weeks and even months. It also explains why removal of the gall bladder itself is not followed by a cessation of attacks of gallstone colic.

The recognition of the microbic origin of gallstones dates only to 1886. In 1897, it was clearly shown that the colon bacillus could be responsible, gaining access either (1) by the intestinal canal by way of the common duct, or (2) through the portal vein. Although jaundice as a sequel to enteric fever had been observed as early as 1826, it was not until 1889 that the typhoid bacillus was recognized as a causative factor, entering by way of (1) the portal vein, (2) the hepatic artery or (3) the common duct. That other infections are directly responsible has been my experience, for low-grade cholecystitides have been observed after acute infectious pneumonia, acute rheumatic polyarthritis and chronic tuberculosis. That gallstones do not oftener result may be explained by the fact that acute suppurative inflammation of bile ducts or gall bladder does not result in calculi, but these are due, rather, to attenuated infections.

TREATMENT OF THE MICROBIC CAUSES OF GALLSTONES.

The treatment of microbic causes of gallstones is the treatment of the infection itself and the limitation of the opportunities for entrance of the infectious agent.

Of the mechanical causes: (1) Foreign bodies, if aseptic, are harmless. If they produce stagnation they favor catarrhal processes, and so give opportunity for infection. (2) Stagnation of bile *per se* does not favor gallstone formation, but, since stagnation favors infection, it may lead indirectly to gallstone formation. (3) Chronic venous congestion of the portal system is a most potent cause for gallstone formation, since it is the great underlying cause of the gallstone disease. This may be caused by (*a*) chronic heart disease (especially mitral obstruction), (*b*) chronic pulmonary disease (especially chronic emphysema, chronic interstitial pneumonia), (*c*) intestinal catarrhs, the results of the abuse of alcohol, gluttony, and rarely from excessive use of vigorous purgatives. Much more frequently intestinal catarrhs result from constipation, which not only predisposes to

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infection, but offers opportunity for autointoxication. Eighty per cent. of all gallstone histories mention this symptom. These causes are obviated by treatment of the primary conditions, and do not call for further comment. (4) Of local mechanical causes not hitherto enumerated, worthy of mention, are (*a*) pregnancy, (*b*) visceroptosis (Glenard's disease), (*c*) overfilled hepatic flexure of the colon, (*d*) displacements of the duodenum, all of which may cause biliary stasis, and, as above mentioned, indirectly, gallstones. The treatment of particular causes must be resorted to. (5) Of extraneous causes, anything which reduces the vitality of the individual is predisposing, as (*a*) anxiety, (*b*) bodily exhaustion from excessive bodily or mental labor, or (*c*) wasting disease.

Thus far we have reviewed the causes of gallstone disease which call for treatment, which is chiefly prophylactic and practically medical.

RESULTS OF GALLSTONE DISEASE.

Of the results of gallstone disease, some should be cited: (1) Diabetes mellitus; a gallstone impacted in the lower end of the common duct or in the ampulla of Vater may lead to infection, chronic interstitial pancreatitis, and destruction of the islands of Langerhans. (2) Glycosuria: From the same course of events, interference with the functions of the islands of Langerhans may cause glycosuria. (3) Chronic interstitial pancreatitis with amylaceous or lipatic indigestion and malnutrition. (4) A gallstone impacted in the duodenum may allow penetration of bile into the duct of Wirsung with hemorrhagic pancreatitis. (5) Floating calculus in the lower end of the common duct. No record of gallstone disease is complete without mention of what, for lack of a better term, has been called "intermittent hepatic fever." Yet an avoidance of the causes lies in the prophylaxis of gallstones, and, outside of an acute attack, the treatment does not differ from that already postulated. The use of olive oil by the mouth, so frequently recommended for this and other phases of the disease, in those cases in which it is tolerated, in sufficiently large quantities and long periods of time, has utterly failed to produce even relief. Operative procedures during an attack, theoretically so clearly indicated for an impending suppurative cholecystitis, have almost uniformly resulted in death, so far as my observation goes.

DIAGNOSIS.

In connection with a discussion of surgical procedures, it should be borne in mind that the diagnosis must be established by the physician and the surgeon should be held responsible only for the relief of mechanical conditions.

On making a diagnosis, the frequency of gallstones in elderly persons, due to a senile atrophy of the smooth muscular tissue in the walls of the bile ducts and gall bladder, should not be forgotten. Courvoisier's law, i. e., gall bladders containing stones are only enlarged so far as the contained stones increase its size, is important in differentiating cancer here or in surrounding organs.

TREATMENT OF GALLSTONE DISEASE.

It has become apparent that the important feature of the treatment of gallstone disease is the regulation of congestions and inflammations in the portal system and dependent organs and in local antisepsis.

The spa treatment of gallstone disease is the one which appeals to many. Success is based on the fact that the patient's habits of life are regulated and the diet controlled, while the salines diminish congestions and inflammations in the portal area. Of the spas, Neuenahr, Kissengen, Vichy, in Europe, Bedford, Sharon, and Las Vegas, in the United States, are preferred. I am aware that most surgeons who are renowned for their exploits in gallstone surgery suddenly acquire great faith in Carlsbad when they discover that they harbor gallstones in their own persons, but the attractions there are many and varied, and it it difficult to induce patients to attend so steadfastly and seriously to the business of getting well as at other places, although theoretically the waters are preferable.

Within recent years practically as good results can be obtained at home by following the subjoined régime:

1. *Diet.*—This should be mixed, for vegetable food produces a smaller amount of bile acids, and saccharin or fatty foods give rise to intestinal fermentation. The meals should be limited in amount, taken at frequent intervals to ensure constant flow of bile, with plenty of plain or feebly mineralized water before each repast. Alcohol is prohibited.

2. *Exercise.*—This is important, especially in the open air.

3. *Cholagogues.*—With the exception of salicylic acid and certain salts and bile itself, and especially salts of the bile acids, it is doubtful if the drugs usually so designated are more than temporarily effective. As for salicylic acid, there is no doubt as to its cholagogue properties, and that it is excreted in the bile and thus disinfects the biliary passages. I have found no advantage in the use of sodium salicylate in conjunction with sodium bicarbonate or sodium benzoate. My personal choice is salicylic acid, not only as a cholagogue, but because it is also a biliary and an intestinal antiseptic, which the salicylates are not, and this diminishes intestinal catarrh.

The bile acids in intestinal putrefaction are believed to be chemical antiseptics and physiologic cholagogues and fat emulsifiers. In hepatic insufficiency they render the bile less viscid and cause an increase of normal bile acids. In gallstone disease they may be preventive, and by causing a copious outpouring of thin bile may prevent, to some extent, bacterial invasion of the gall bladder and hepatic duct, and at the same time favor drainage of the bile channels. The use of bile acids and their salts is more scientific than the administration of bile itself, because they are the physiologically active principles of it, and any danger from the introduction of poisonous bodies from the bile, which really is an excretion, is thus avoided. Of all the preparations, sodium glycocholate, in from ½ to 3 grain doses so frequently as is necessary, is the best. However, both bile as a whole and its salts are uncertain in action. Like salicylic acid, the acid sodium oleate is excreted by the epithelium of the bile ducts to assist in disinfection.

Some five years ago I became interested in phenolphthalein from reading the reports of von Vamossy and Tunnicliffe, who claimed that it is a safe and prompt laxative. Later Schwartz, Wendhorst and Corby have added their testimony. Since this, although a phenol derivative, does not dissociate in the intestines to any appreciable extent, its antiseptic effects must be prolonged through the entire length of the alimentary tract. If the acid sodium oleate is carefully prepared and the salicylic acid is obtained from natural sources, one and one-half grains of each of these may be combined in a pill with one grain of phenolphthalein and

one-fourth of a grain of menthol; this allays nausea, is a carminative, and acts as an intestinal antiseptic and increases peristalsis. This combination, given in doses of from four to eight pills in a full glass of hot water once or twice daily, has been efficient in some thirty-five instances of gallstone disease. The elimination of gallstones of the hepatic variety is generally rapid. That they may be painless is best achieved by the administration of amyl valerate, 15 minims in capsule, two hours before breakfast and after supper.

As an illustration of the treatment of gallstones the following is recorded as representative:

CASE 1.—Mrs. T., multipara, suffered from acute pains in the epigastric, hypochondriac and umbilical regions for three years. The pains were at first brief, but later became intense and lasted from five to ten hours, recurring at intervals of several weeks.

Treatment and Result.—December 15, 1905, a diagnosis of bile stasis, resulting in gallstone disease, was made, and her physician ordered 15 grains of sodium glycero-phosphate in a glass of hot water, three times daily before meals. She remained well until March 14, 1906, when several long, severe spasms occurred.

On March 27, after a colic on the previous day, the stool was examined, and a small calculus consisting of cholesterin, was found. April 1 she was put on the pill above mentioned, three, with hot water morning and evening, and amyl valerate, one capsule (15 min.) two hours before breakfast and after supper. At night hot flaxseed poultices were applied. In the first eleven days of this medication eighteen stones and many fragments passed, the spasms being mild and of much shorter duration than previously. She has thus far been perfectly well.

As an illustration of the treatment of gallstone disease the following is recorded:

CASE 2.—K. A., aged 54, a retired tobacco merchant, was seen for the first time about midnight, Oct. 17, 1892, suffering from gallstone colic.

History.—There were the usual excessive pain, vomiting, cold perspiration, and heart beat irregular in force and rhythm, with occasional intermissions. One grain of morphin given hypodermatically in two doses, at thirty minutes' interval, gave him a fair degree of comfort, and the pain entirely ceased within two hours from its sudden onset. The next morning there was considerable soreness over the right hypochondriac region, but the gall bladder could not be palpated because of obesity. The following day the calculus was recovered from the stool and was of the mixed bilirubin and cholesterin variety, the nucleus being of cholesterin; it was somewhat larger than a cherry, and had two facets plainly, and several not so plainly marked.

Treatment.—For lack of better, Durande's mixture was given in capsule, 15 m. of ether with 10 m. of turpentine, thrice daily. This was continued until Feb. 23, 1893, when another attack supervened, one-fourth of a grain of morphin being sufficient to relieve the pain, and thirty-six hours later several (five or six) stones, the size of a French pea, nearly all facetted, and of the same physical appearance as the first, were recovered. The Durande mixture was continued for about a month and then omitted altogether. The patient was encouraged to take sufficient exercise, mostly walking in the open air, to reduce his weight to normal, to limit his alcohol to extreme moderation, and to live upon a mixed diet.

Subsequent History.—During the succeeding eight years he remained in good physical condition, and my only attendance was for occasional attacks of catarrhal endobronchitis. On Nov. 19, 1901, he had the third and last attack of colic. This, although not so severe, requiring in all one-fourth of a grain of morphin, lasted for about four hours. The stones passed varied from grains of sand to the size of a split pea, were solid, rough, brownish-black in color. Several were joined together, and were recovered to the number of sixteen or more during the next forty-eight hours. These were not facetted, and were pure bilirubin-calcium calculi. Recognizing that these were of hepatic origin, I turned my attention toward the liver and limited the diet to proteids and increased water, and gave daily doses of sodium phosphate and intestinal antiseptics.

Urinary Findings.—The slight icterus which had existed, had disappeared, when, rather unexpectedly, a urinary examination undertaken November 24, for the purpose of determining how far he was taking care of his diet, showed 3 per cent. of glucose in both that of fasting and digestion. Inasmuch as indican was not increased, and the specific gravity, urea and total solids were normal, no change was made, and the sugar disappeared before Dec. 3.

In January, 1902, he was put on a mixed diet, five miles daily walk for exercise, no beer, and a moderate amount of tobacco. During the following June he was subjected to considerable worry, and five-eighths of 1 per cent. of sugar was found in the urine on the 13th. This was reduced to one-eighth of 1 per cent. by July 10, and had disappeared by July 15. The urea on the latter date was 1.70 per cent. and there was a moderate amount of indican.

Attack of Duodenitis.—He remained well until August, 1903, when, during my absence in Europe, he had a severe attack of catarrhal duodenitis, icterus, and clay-colored stools, for which he was treated by a lodge physician until I saw him again November 26. At that time I found slight corporeal and marked conjunctival icterus, itching, clay-colored stools, marked emaciation—a loss of sixty pounds since the preceding August. The urine contained no sugar, traces of albumin, urea 1.20 per cent., and a few hyaline casts. The liver reached to the level of the umbilicus, the gall bladder was easily felt, and was distended and fluctuating. By palpating under the edge of the liver, which was possible because of his emaciation, the head of the pancreas and considerable of the body could be felt through the empty stomach as above the second lumbar vertebra. It was enlarged, hard and nodular, the outlines could be fairly well traced.

Treatment.—The usual treatment for biliary obstruction resulting from catarrhal duodenitis was at first unsuccessful. Later, vigorous purgation by calomel, followed by sodium phosphate in large doses, the intense fetor of the stools being corrected by intestinal antiseptics, of which bismuth naphtholate, in large doses, was most effective, resulted in the first normal-colored stools December 14. The itching was relieved by daily tub baths, containing sodium bicarbonate and sodium borate. The liver became smaller, extending only to two finger breadths below the costal margin, the gall bladder became less palpable, and the intestinal fermentation ceased. The condition of the pancreas remained unchanged.

Consultation.—Feb. 3, 1904, Professor Satterthwaite confirmed my diagnosis of presumable gall stone in the ampulla of Vater obstructing the duct of Wirsung, and that the duct of Santorinus probably did not connect with the duct of Wirsung. That the islands of Langerhans were not affected was inferred from the absence of sugar in the urine. This, however, showed a trace of albumin, the presence of bile, moderate amount of indican and urea 1.80 per cent.

Later History.—Practically the same conditions existed March 3. On that date I commenced to administer 12 minims of acid sodium oleate, 12 grains of natural salicylic acid, 8 grains of phenolphthalein and 2 grains of menthol, divided into eight pills, four to be taken morning and night in full glass of hot water. On March 12, Dr. Stimson saw the patient with me and confirmed the diagnosis, and from the standpoint of the surgeon, advised a continuance of the treatment. June 17 it was recorded that the liver had returned to its normal size, the gall bladder was no longer palpable, and the head of the pancreas only could be felt as slightly indurated, but not nodular nor distinctly outlined. October 31 a few hyaline casts persisted in the urine, there was no bile, nor excess of indican, the urea was 1.45 per cent. The patient had regained his normal weight and could walk from six to eight miles daily. The pills were reduced to four daily. May 13, 1905, the urine was normal and the patient's condition excellent. The pills had been continued. On April 20, 1906, the patient felt absolutely well, having regained his strength. The pancreas is no longer palpable. The bowels are regular and normal, and no medicine is taken except the four pills. In fact the patient considers himself cured.

In the light of what we have learned during the past fourteen years, we may say that the first two attacks of biliary colic were due to gallstones originating in the gall bladder itself, probably starting from an ascending infection; that the last attack was to be attributed to gallstones arising in the hepatic bile ducts; that the glycosuria was due to a stasis of bile from obstruction at the ampulla of Vater, and that so soon as this was measurably relieved the colic disappeared; that during this period the islands of Langerhans were functionally disturbed, that an interstitial pancreatitis resulted which disappeared as the bile stasis was relieved and eventually cured by treatment, and, finally, that complete cure, i. e. *restitutio ad integrum* has resulted.

CONCLUSION.

The conclusion which we should reach is that gallstone disease is not purely a disease due to a foreign body, but is primarily a hepatic disorder. The removal of these stones has but little to do with the cure of the patient, for when the end result—the removal of the gallstones—has been accomplished by surgery, the patient is but at the commencement of his treatment to remove the cause of the disease, which is entirely within the province of the physician. The congestions and inflammations in the domain of the portal system are the conditions that require treatment and the infectious catarrhs of the bile ducts and gall bladder and faulty bile formation in the liver are those that need correction, and these are purely medical problems.

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CHRONIC NON-TUBERCULAR AFFECTIONS OF THE LUNG.*

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A strict interpretation of the subject embraces the consideration of such an array of conditions as to preclude their profitable discussion within the limits of this paper. A technical construction of what has been assigned would exclude chronic bronchitis and bronchiectasis on the score of their purely bronchial limitation. They almost invariably coexist, however, with emphysema, chronic interstitial pneumonia, pneumonokoniosis and non-tubercular bacterial infections, the clinical manifestations of which it is my purpose to review. No attempt is made to present an exhaustive study of the separate diseases embraced even in this restricted class of chronic pulmonary disorders. In view of the frequent interactive combination of these conditions, a liberal and practical classification is adopted in accordance with the manner of clinical presentation. To this end the thought is directed toward the composite blending of diseased conditions as exhibited in the individual, rather than to distinct affections, which rarely exist independently.

As the chief interest attaching to chronic non-tubercular pulmonary conditions relates to their simulation of consumption, an effort toward clearer differentiation may be of some value. Attention is directed, (1) to a certain group of conditions regarded as more or less indigenous to Colorado and often confused with tuberculosis, (2) imported cases closely resembling consumption.

The indigenous cases are so designated by virtue of the fact that the morbid changes are found to develop as a direct result of local conditions. Certain etiologic factors peculiar to the general locality, serve to characterize a class of cases in many respects decidedly unique. In the very midst of all stages and conditions of imported pulmonary tuberculosis in Denver, are found numerous cases of so-called miner's phthisis, difficult of disassociation from consumption, yet in no sense identical with it. These patients may present all the rational symptoms of tuberculosis, even to the point of frequent pulmonary hemorrhages, exhibit suggestive physical signs and occasionally show the presence of tubercle bacilli. The appearance of bacilli only after long continued observation, does not justify the assumption of tuberculosis as a factor of etiologic importance. A terminal infection is merely engrafted on a soil previously made receptive by virtue of marked pathologic changes, increasing the vulnerability of the tissues. These cases are generally regarded by the laity, and unfortunately, to some extent, by the profession, as a form of consumption, and are so classified in official mortality records. Instances of their occurrence are cited frequently to illustrate the alleged development of indigenous tuberculosis in spite of favorable climatic conditions. The actual morbid processes consist of a more or less severe chronic bronchitis, emphysema, bronchiectasis, varying degrees of pneumonokoniosis, with often a genuine cavity formation resulting from anemic necrosis, and secondary circulatory disturbances. They are found to develop almost exclusively in those sections of the state devoted to the mining industry, in sparsely settled regions on mountain sides where tuberculosis seldom exists. Predisposing causes are found in the prolonged hours underground and the constant breathing of an atmosphere, not only deficient in oxygen, but vitiated by impurities. The limited oxygen becomes more or less devitalized, as the air, not being in motion, is breathed over and over again. In addition to the partial asphyxiation, and the frequent extreme dampness, exciting causes relate to the exhalations from the candles confined within a relatively small air space, and the smoke resulting from the blasting powder, which is difficult of complete removal despite modern efforts toward ventilation. The necessarily constrained position during the greater portion of the day, the frequent wetting of the feet, the alcoholic habits, immoderate exercise at high altitudes and unhygienic surroundings when not at work, constitute important supplemental features. The conditions are quite dissimilar from those obtaining in the production of coal miner's consumption, stone cutter's disease, grinder's or potter's phthisis and the like, in that the sole essential factor is not the irritation produced by the inhalation of fine particles of dust. Chronic catarrhal processes in the bronchial mucous membranes take place, followed by emphysema, resulting from nutritional changes in the pulmonary tissues, and increased intra-alveolar pressure during violent attacks of cough. Moderate fibroid tissue proliferation is superinduced in some cases, but by no means to the extent observed among followers of other occupations responsible for the production of pneumonokoniosis. While the distinguishing feature is the chronic bronchitis and emphysema, bronchiectasis, both of the cylindrical and saccular varieties, frequently supervenes. Its development is due in part to the frequent paroxysmal cough, the weakening of the bronchial wall from the emphysema, and the more or less continuous pressure exerted by stagnating secretions.

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Corresponding to the fibrous tissue proliferation of interstitial pneumonia and resulting contraction from the changes external to the bronchial wall, there develop bronchiectatic cavities. Through the process of ulceration of the mucous membranes these bronchiectases may be transformed into genuine pulmonary cavities. These may also develop by reason of necrotic softening of the tissues more particularly when the pneumonokoniosis is pronounced. In this event they are more likely to increase in size and have greater bearing on the subsequent course, especially if communicating with a bronchial tube. Secondary to the pulmonary changes there ensue marked circulatory disturbances manifested by venous engorgement and enlargement of the right heart.

Symptoms referable to this group of chronic disturbances are of gradual development and relate chiefly to dyspnea, cough and expectoration, followed by loss of weight and strength with gradually increasing cyanosis. The cough is frequent and unattended at first with much expectoration. Later it becomes more distressing and paroxysmal in character, particularly after the formation of bronchiectases or pulmonary cavities. There exists no definite relation between the degree of bronchial irritation and the extent of fibroid change in the lung. The sputum is frequently quite frothy, light and devoid of pigmentation, becoming more purulent with the increasing periodicity of cough. Under these conditions the characteristic separation into distinct layers may be noted. Little of practical value attaches to its bacteriologic examination, save for the occasional presence of tubercle bacilli as a final incidental complication.

The dyspnea, which at first is noticeable only on slight exertion, becomes progressively worse, until the patient is induced to seek relief at lower elevations.

The cyanosis is usually out of proportion to the physical evidences of cardiac and respiratory embarrassment. Impaired appetite and digestive disturbances result in diminished nutrition, increasing weakness and night sweats. There is rarely any elevation of temperature save during temporary acute exacerbations.

Hemorrhages are not infrequent and may vary from slight bloody discolorations of sputum to a sudden fatal loss of blood.

The physical signs on inspection may consist of, (1) varying degrees of dyspnea, (2) capillary dilatation on the chest front, (3) the characteristic changes in the configuration of the thorax, commonly ascribed to emphysema, though rarely to such an extent as to justify the descriptive appellation of "barrel-shaped chest," (4) in some cases either unilateral or bilateral retraction of the apices.

On palpation, percussion and auscultation, (1) signs of partial consolidation, recognized usually at the apices, (2) fine and medium sized moist râles heard in any portion of the chest, though more frequently at the bases and almost always on each side, (3) unilateral dullness with diminished intensity of respiratory sounds and localized changes in pitch, quality and rhythm, with or without moisture, (4) cavity signs in almost any portion of the lung, precisely as in tuberculosis. In my experience there has been found in neither of these condition any invariable predilection as to the site of the cavity involvement.

In comparison with simple chronic bronchitis and emphysema, or with ordinary cases of interstitial pneumonia, the course of the disease is short, rarely lasting over four or five years. This may be accounted for to some extent by the influence of altitude, the usual unwillingness and inability of the patients to avail themselves of change of residence, and their greatly diminished resistance from habits of dissipation. While considerable relief is usually experienced on going to lower elevations, the unfortunate issue is but temporarily delayed, the prognosis being invariably unfavorable.

The essential feature of diagnosis consists in the differentiation from pulmonary tuberculosis. With the aid of systematic sputum examinations, there is no reason to confound the two conditions, despite such confusing clinical manifestations as the presence of pulmonary cavities and hemorrhage. Without recourse to the sputum, as is sometimes the case in mining camps, a provisional diagnosis of its non-tubercular character is made on the history, occupation and absence of fever. The presence of bacilli only in the last stages of the disease, must be regarded as a purely incidental infection devoid of any etiologic importance.

The fact that chronic bronchitis, emphysema, chronic interstitial pneumonia and pneumonokoniosis, with or without cavity formation, constitute a very considerable proportion of all cases of chronic non-tubercular pulmonary affections, and that the grouping of these conditions as described is frequently noted in Colorado, affording opportunity for errors in diagnosis on account of the resemblance to tuberculosis, offers, perhaps, a justification for this manner of presenting one phase of the subject.

In view of Colorado's peculiar position as a health resort, and the pseudotubercular character of many chronic pulmonary disorders, it may add further interest to consider the apparent similarity to consumption of other non-tubercular ailments to be designated as imported cases.

This distinguishing relation which renders possible mistaken diagnosis and treatment, represents more of practical value than obtains from the consideration of all other features. The experience of observers in favorable climates affords conspicuous opportunity to note such inaccuracies among cases sent from abroad.

Of special importance is chronic influenza, capable in some instances of producing all the rational symptoms and physical signs of tuberculosis as has been shown by Dr. Lord, of Boston. While I have conducted no systematic investigations, my clinical experience has been such as to furnish corroborative evidence of his conclusions. Many cases have been observed in the past whose sputum not containing tubercle bacilli, were unfortunately not examined for the Pfeiffer bacillus, but in whom the other evidences of tuberculosis appeared almost incontrovertible. The subsequent amelioration of the rational symptoms with total disappearance of physical signs were entirely disproportionate to the required periods for corresponding improvement in similar cases showing the tubercle bacilli. These cases invariably presented the history of an acute onset with moderate constitutional derangement, considerable bronchitic disturbance, cough somewhat paroxysmal, expectoration distinctly purulent without tubercle bacilli, streptococci, pneumococci or staphylococci. It is fair to assume that such cases exhibiting various degrees of consolidation with accompanying catarrhal conditions, each disappearing completely after persisting for months, may be reasonably regarded as having been instances of chronic influenza, particularly in the light of recent demonstrations of the presence of the influenza bacillus in similar cases.

Case 1.—A striking illustration of the possible influence of this infection was observed two years ago in a child of 10 years. She came under my care about one month after the initial onset of her illness. In addition to general symptoms, including cough, loss of weight, weakness, slight afternoon elevation of temperature, there existed pronounced consolidation of the left apex with fine moist râles in the infected area. During the following six weeks the consolidation gradually extended downward to the fourth rib and lower angle of the scapula, with moist râles throughout, and slight aggravation of her general symptoms with increasing loss of weight. The physical condition remained stationary for the ensuing two or three months, when improvement began to take place. Before the end of a year there was complete disappearance of cough and expectoration, with increased weight and no remaining evidence of the slightest pulmonary involvement. The child has remained absolutely well ever since. An interesting feature of this case is the fact that the progress of the consolidation corresponded to the so-called line of march or extension downward of the physical signs in tuberculosis, on which considerable stress has been laid by some observers.

It has not been my experience that pulmonary tuberculosis has invariably started at the extreme apex on one side and extended downward to the lower portion of the lung prior to the involvement of the opposite side. I have even found definite signs of tubercular infection in any portion of the lung with the apex uninvolved.

Case 2.—Another instance of the possibility of error resulting from the influenza bacillus is seen in the case of a lady who has remained under my observation eight years, exhibiting at first signs of very active and extensive tubercular infection of each lung. There has taken place an astonishing improvement in all respects, including a gain of over fifty pounds in weight, with strength and endurance quite exceptional. For over two years there have been no bacilli found in the sputum, in spite of frequent exhaustive examinations, and no evidence of existing tubercular activity in the lungs, though signs of consolidation still persist. Two months ago there developed a severe influenza infection, attended with distressing paroxysmal cough, copious purulent expectoration, moderate elevation of temperature and impairment of general strength and nutrition. Repeated examinations showed continued absence of tubercle bacilli, yet the physical signs resulting from extensive fibroid change in the lungs with a recent bronchial catarrh suggested clearly an extensive active tubercular process.

Without the laboratory findings a precise conception of the diagnosis and general outlook in cases of influenza infection following arrested tubercular processes would be utterly impossible.

Apart from the influenza bacillus other micro-organisms have been found to exert an apparent influence in the production of symptoms and signs distinctly suggestive of tuberculosis. I have observed several notable instances of the relation of the pneumococcus of Friedlander to these chronic disturbances in the absence of tubercle bacilli.

Case 3.—In 1896 a man from Vermont, recovering from tuberculosis in Colorado, suddenly was summoned home by the telegraphic announcement that his 3-year-old boy was dying of acute pneumonic tuberculosis. He returned to Colorado immediately, bearing in his arms the child, who had been almost comatose the entire distance. The temperature had remained in the neighborhood of 105 and the pulse and respirations were found markedly accelerated. There was moderate cyanosis, stupor and a partially consolidated right lung. The chief point of interest attaches to the delayed resolution, which was not completed for several years. There persisted for fully a year a daily afternoon rise of temperature, continued cough, with signs of consolidation and moist râles without tubercle bacilli. After the lapse of ten years the child is now perfectly well, physical examination of the chest being entirely negative. It is almost impossible to conceive of this pneumonia as having been tubercular, not only because of the absence of bacilli, but also in view of the complete recovery in a child so young. Any attempt to explain the absence of bacilli by an alleged miliary disturbance with pulmonary manifestations is controverted by the fact that the child recovered. Though undoubtedly an instance of pneumococcic infection, the persistence of the symptoms and signs strongly suggested a tubercular process.

I have recently noted the existence of symptoms and signs suggestive of tuberculosis, coincident with the presence in the sputum of the bacillus diplococcus catarrhalis.

Case 4.—A man of 44 years arrived in Colorado in January of the present year, two months after the development of cough and expectoration, with loss of weight and fever. On examination fine moist râles were plainly heard at the right apex above the clavicle, with slight consolidation. Repeated examinations of the sputum were negative, save for the invariable presence of large numbers of the diplococcus catarrhalis. While there may exist in this case no relation between the physical signs and the bacteriologic findings, the thought is suggested that unilateral apical signs accompanying cough and expectoration, if accepted as sufficient evidence of incipient tuberculosis, without sputum examination, would permit the subsequent recording of rather astonishing and highly satisfactory results of management.

Obstruction of a primary bronchus has occasionally resulted in an erroneous diagnosis, and the sending of the patient to a far country for tuberculosis. In the instances I have been permitted to observe, the obstruction has been due to either enlarged mediastinal glands, a dilated and hypertrophied right ventricle, or aneurism. The history, condition of arteries, associated symptoms and physical signs of aneurism are often so definitely characteristic as to preclude even a passing allusion.

Case 5.—I have under my care a lady of 22 years, who came to Colorado in October, 1905, one year after a beginning loss of weight and strength, with following cough and expectoration. She had exhibited an elevation of temperature, with occasional chills and night sweats. Small hemorrhages had been fairly numerous and the diagnosis of tuberculosis was made. There was dullness in the left front from apex nearly to base, with complete absence of breath and voice sounds. A supposed apex beat was visible well within the mammary line, but slightly elevated. In the posterior axilla and in the back crackling râles of a greater intensity than can be described or imagined were disseminated throughout, occurring both in inspiration and expiration and recognized easily with the stethoscope slightly removed from the skin. A careful examination failed to disclose any dullness to the right of the sternum, and it was almost impossible to outline the left boundary of cardiac dullness. The cardiac impulse, however, could be felt nearly to the anterior axillary line, and murmurs of mitral stenosis and regurgitation were audible. Examination of the sputum showed no tubercle bacilli. Diagnosis: bronchial occlusion from a dilated heart. During the ensuing five or six weeks hemorrhages were frequent, with periodic attacks of alarming dyspnea and cyanosis. There are now no symptoms of cardiac embarrassment, despite persisting dilatation. There is less evidence of lung compression in front, and examination of the back is practically negative, all adventitious sounds having disappeared.

Case 6.—In 1899 an instance of bronchial obstruction through compression of mediastinal glands was observed in a boy of 18 from New Hampshire. The first symptoms of his trouble developed fifteen months before arrival, consisting of paroxysmal cough without expectoration, shortness of breath, one or two moderate hemorrhages and loss of ten pounds in weight. With normal percussion resonance there was absence of voice and breath sounds throughout the left lung, without displacement of organs. Absorption took place in about eight months, followed by disappearance of symptoms and signs.

Another class of cases has been observed in which mistaken diagnosis was caused through erroneous interpre-

tation of the significance of recurring pulmonary hemorrhages. Bleeding from the lungs, without the recognition of mitral disease, and incapable of explanation by the existence of other pathologic conditions, and especially when associated with loss of weight and strength, naturally suggests, even without physical signs, a latent or concealed tubercular affection.

Case 7.—Nine years ago a man in middle life was sent to Colorado for supposed tuberculosis. I found him in bed, bleeding moderately from the lungs. The history was that of loss of weight and strength, with frequent hemorrhages during a period of several months. There was considerable pallor, weak and rapid pulse, but no elevation of temperature. Examination of the chest entirely negative. After some delay a diagnosis of purpura hemorrhagica was clearly established, followed by satisfactory improvement under appropriate treatment.

Case 8.—A lady of marked neurotic temperament, the wife of a physician, was sent to Colorado in 1899 on account of very severe pulmonary hemorrhages. Both parents and three brothers and sisters had died of tuberculosis, she being the only survivor. There was moderate dry cough, with expectoration, some loss of weight and marked anemia, but physical examination negative. A few weeks after arrival she experienced a copious hemorrhage from the lungs, followed by a severe recurrence in exactly four weeks. On inquiry I was interested to learn that all her previous hemorrhages took place at a time corresponding to the menstrual period. It further developed that she had shortly before suffered the removal of the ovary and tube of one side, demanded by probable infection resulting from three previous miscarriages. A diagnosis of vicarious menstruation was promptly made and the nature of the condition fully explained. After treatment directed to the control of the neurotic disturbance and the anemia, the patient quickly improved, exhibiting but slight expectoration of blood at the time of the ensuing three periods of menstruation. There has been no subsequent hemorrhage.

The somewhat unusual cases that have been reported are illustrative of the difficulties occasionally encountered in arriving at correct conclusions regarding the extent and nature of chronic intrathoracic affections. The confusing conditions which have been enumerated are by no means frequent in general practice, but their occasional occurrence emphasizes the necessity for continued vigilance and clinical study. The higher usefulness of internal medicine depends on a proper reconciliation of the results of clinical and laboratory investigation. With no wish to exalt the findings of the microscope above the data derived from clinical observation, the fact remains that the internist must avail himself of the opportunities for securing precise information afforded by modern laboratory methods and knowledge. While fully cognizant of its many limitations and deficiencies, I venture to present this paper as a plea for more complete diagnostic technic applied to chronic pulmonary conditions.

SOME AXIOMS CONCERNING OCULAR ROTATIONS.*

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A convex sphere set in a concave hemisphere, the two having a common center, the one fitting in the other as shown in Figure 1, can be rotated on any one of its diameters, and only on a diameter, as an axis. The center of curvature, the point to which all the radii converge, is the center of rotation. The point on the surface at which the force is applied and the direction of the force determine what the plane of rotation shall be and fix the axis of rotation at right angles to this plane. This can be best understood by a study of Figure 1.

A B D represents the concave hemisphere whose center is *c*; *a d b e* represents the convex sphere whose center is also *c*. If the force is so applied that *a b* shall be the rotation plane, the axis of rotation will be the diameter *d e*; if the force makes *d e* the rotation plane, then the diameter *a b* becomes the axis of rotation. In like manner, if the force makes *m n* the rotation plane, the diameter *h i* becomes the axis of rotation; and if the force makes *h i* the rotation plane, then the diameter *m n* becomes the axis of rotation. The law governing the rotation of a convex sphere lying loose in a concave hemisphere, the two being concentric, is that the force may be so applied as to make the plane of rotation any plane that would divide the sphere into two equal parts; that the axis of any rotation must be a diameter at right angles to the rotation plane, and that the common center of all rotations must be the center of curvature. In such a sphere there is no diameter that must be common to every plane of rotation; hence there is no

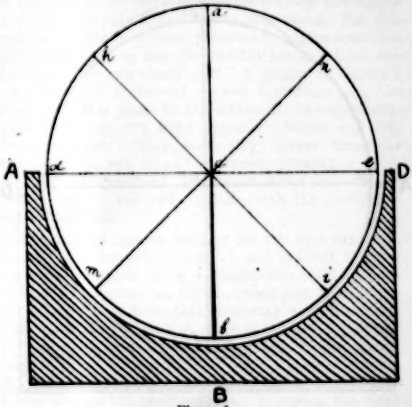

Figure 1.

single plane that must contain the axes of all rotations; but every rotation plane and every axis of rotation must cut the center of rotation which is the center of curvature.

Figure 2 represents the eye set in its orbit. A B D represents the hemispherical concavity in the bed of fat in which the eye *r d b e* rests. The central point of the macula, *b*, is the point through which all retinal meridians pass; hence it must be the posterior pole; the center of retinal curvature, *c*, is the center of rotation, for through it all diameters pass and only a diameter can be an axis of rotation. The antero-posterior axis—the optic axis—begins at *b*, the center of the macula, passes through *c*, the center of curvature, thence on to *a*, which point, being 180° from *b*, must be the true anterior pole, for through it the completed meridians would cross. The line *b c a* prolonged from *a* would cut the corneal curve, *s r x*, at *r*, and this point, at or near the center of the cornea, may be called the anterior pole of the eye, though the real anterior pole, as shown, lies in the aqueous chamber at *a*. The line, *b c a r*, is not only the antero-posterior axis—the optic axis—but

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it is also the visual axis. The line *d c e* is the transverse axis of the eye and lies in a plane equally distant from the two poles, *b* and *a*, which is the equatorial plane.

Unlike the loose sphere shown in Figure 1, the eye shown in Figure 2 has a single diameter that must lie in every possible rotation plane, and that line is the visual axis *b c a r*. The purpose of every ocular rotation is that the point of view may be changed, that the visual axis may be rotated so as to bring the macula under another image. That this may be done in the shortest time and with the least expenditure of force, the visual axis is made to move in a plane common to the first and second points of view and the center of rotation. The axis of this rotation must cut the center of rotation and must be at right angles to the rotation plane. The visual axis must lie in every rotation plane, whether the rotation is from the primary to a secondary position, or from one secondary position to another secondary position. Since the visual axis lies in the plane of every possible rotation, all rotation planes must cut the two poles, *b a*. Only meridional planes cut the two

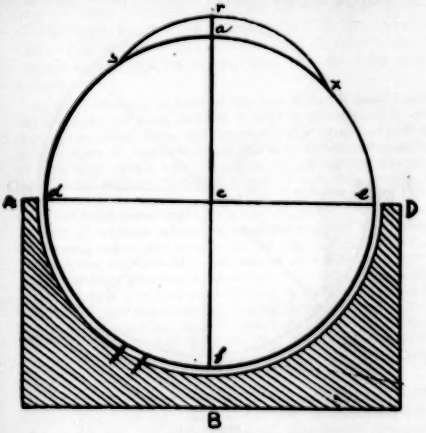

Figure 2.

poles; hence every plane of rotation of the eye is a meridional plane extended. The only plane cutting the center of rotation at right angles to all the meridional planes is the equatorial plane; hence the equatorial plane contains the axes of all possible rotations.

Every rotation plane of the eye is a fixed plane, for in it lie three fixed points, the center of rotation and the first and second points of view. Every point on any corneo-retinal meridian, other than the one which is the plane of a given rotation, is moved in a plane parallel with the rotation plane; hence ocular rotations must be effected without torsioning. This is true whether the rotation is in one of the four cardinal directions or in any oblique direction.

Under the influence of brain centers the ocular muscles effect all rotations. Their number, their origins and attachments are such as to make every rotation take place in a meridional plane, around an axis lying in the equatorial plane. The ideal eye is rotated in the horizontal plane by only one muscle, either the externus or the internus; in the vertical plane by only two muscles; if upward, by the superior rectus and inferior oblique; if downward, by the inferior rectus and the superior oblique; in any oblique plane by three muscles, two recti and one oblique. If but one muscle is concerned in a given rotation it is because the rotation plane (the extended meridional plane) bisects the muscle from its origin to its insertion. If two or more muscles must act in a given rotation, it is because their combined action would be the same as the action of a single muscle so related to the eye that the rotation plane would bisect it from origin to insertion. With fewer than six muscles rotations of the eye in all directions could not be effected, and a greater number is not needed.

From one to three cortical brain centers are excited in every ocular rotation, and only cortical centers are excited when there is but one eye. Under the control of one or other of four cortical centers the oblique muscles steady the plane of rotation (a meridional plane) so that it shall bear a fixed relationship to the median and horizontal planes of the head. In doing this the obliques keep the vertical axis of the eye parallel, at all times, with the median plane of the head and compel the transverse axis to lie always in the horizontal plane of the head. This action of the obliques is in the interest of correct orientation.

One, or at most two, of the four cortical verting centers, acting on their respective recti muscles, cause the visual axis to move from one point of view to another in the rotation plane made steady by an oblique, under the influence of one of four cortical centers.

In binocular rotations the cortical centers can make the ocular muscles work in harmony only when the muscles constituting any one of the several pairs are equal in tonicity. Unequal tonicity is provided against by the existence of fusion centers which are basal and under the control of the fusion faculty of the mind. Without these centers it would be impossible for some eyes to have binocular single vision. Unequal tonicity of muscles necessitates continuous activity on the part of one or more fusion centers in order to prevent diplopia.

When there is equal tonicity of muscles binocular rotations in the four cardinal directions are effected without excitation of the basal or fusion centers. When there is orthophoria every oblique binocular rotation excites two fusion centers, but only during the continuance of such rotation. To illustrate: Rotation of the two eyes obliquely up and to the right is the result of voluntary discharge of neuricity from the first, the fourth and the eighth conjugate centers which call into action, respectively, the two superior recti, the right externus and the left internus, and the right superior oblique and left inferior oblique. The right superior oblique, in preventing a loss of parallelism between the vertical axis of the eye and the median plane of the head, helps the externus, but hinders the superior rectus; the left inferior oblique, in preventing a loss of parallelism between the vertical axis of its eye and the median plane of the head, helps the superior rectus, but hinders the internus. Harmony in this rotation is made possible only by excitation of the right first and left third basal centers.

In binocular rotations each eye must obey the law of monocular rotations as if the other eye had no existence; that is, one, or at most two, of its recti muscles must move the visual axis from the first to the second point of view in a meridional plane made so steady by the action of an oblique muscle that the vertical axis shall not

lose parallelism with the median plane of the head—all of this in the interest of correct orientation. But there is another law that must be obeyed by the two eyes in the interest of binocular single vision. This law is enforced whether the eyes are still or in motion, and may be expressed in these words: The two visual axes must lie in a plane common to the point of view and the two centers of rotation, and they must intersect at the point of view. It is evident that when the eyes are in rotation, up or down or obliquely, this plane is also rotating and that the axis around which it rotates is the line connecting the centers of rotation of the two eyes. In binocular rotations there is an individual rotation plane (a meridional plane) for each eye, along which the visual axis of that eye alone must move from the first to the second point of view, and there is that other plane in which must lie the two visual axes, the two centers of rotation and the two horizontal retinal meridians.

When the head is erect and the two eyes are in their primary positions, this plane, in which the visual axes must lie, becomes the plane of the horopter or monoscopter; and in this position, the eyes being ideal, it coincides with the extended fixed horizontal plane of the head.

When the point of view is directly to the right or left, this plane remains coincident with the fixed horizontal plane of the head and is motionless, while the visual

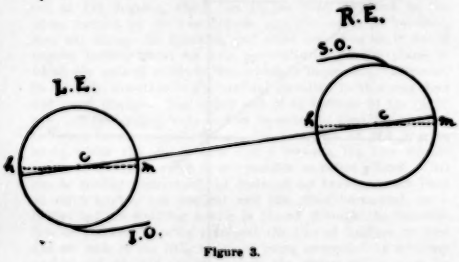

Figure 3.

axes are made to move in it to the second point of view.

When the second point of view is directly above or below, this plane is rotated on its only axis, the line connecting the centers of the two eyes, the visual axes remaining stationary in it, provided the first and second points of view are equally distant from the two eyes. The extent of elevation or depression of the second point of view is measured by the angle formed by the intersection of the fixed plane of the head and the rotated horopteric plane, in the axis on which the plane has been rotated. This is true whether the object be directly up or down or at any oblique angle.

In every binocular oblique rotation, above or below the extended fixed horizontal plane of the head, the plane of the horopter must be rotated directly up or down on its only axis until it reaches the second point of view. This is done by the elevator or depressor muscles, as the case may be, but at the same time the lateral recti muscles are making the visual axes move in this plane toward the objective point, reaching this point at the same time that the horopteric plane is brought to it. Each visual axis, while moving in the horopteric plane, has moved along its own rotation plane (meridional plane extended). That no torsion has occurred is evidenced by the fact that, at the completion of the rotation, the second point of view, the centers of the two eyes and the two horizontal retinal meridians all lie in the rotated horopteric plane. The final result of any oblique binocular rotation is the same as if the visual axes had remained still in the horopteric plane while it was being so rotated as to reach the second point of view; then this plane having become still, the visual axes had rotated to that point.

The setting of ideal eyes in ideal orbits is such that the horopteric plane, when at rest in the primary position, coincides with the extended fixed horizontal plane of the head. All orbits are not ideal as to height, one often being lower than the other by a fraction of an inch. It is not possible for the horopteric plane of such eyes to be properly related to the extended fixed horizontal plane of the head. The horopteric plane must include the visual axes, the centers of rotation and the horizontal retinal meridians, but the fixed horizontal plane can not do so if one eye is lower than the other. Figure 3 teaches an evident truth more plainly than simple words could set it forth. The right eye is represented as higher than the left. The line *c c* connecting the two eyes is the only axis around which the horopteric plane can rotate, and lies in that plane. But this plane can be the horopteric plane only on the condition that it must include also the two horizontal retinal meridians and the two visual axes. A glance at Figure 3 shows how the horizontal retinal meridians may be brought into this plane by the action of the eighth conjugate center on the right superior oblique and left inferior oblique. This torsioning makes binocular vision possible, but it makes correct orientation with the two eyes impossible. The figure shows that the inclined plane *c c* can not coincide with the horizontal plane of the head.

It also teaches that, so long as the two eyes are open, the right superior oblique (S O) and the left inferior oblique (I O) must be in a continuous state of contraction, their center, the eighth, being just as continuously active. Rest from this abnormal work can come to either eye only when the other is covered. The left eye covered, as in refraction, allows the eighth center to rest; therefore, the relaxed right superior oblique will let the horizontal retinal meridian leave the plane *c c*. and assume the position *h m*. Likewise, the right eye covered, the eighth center ceases its activity and the relaxed left inferior oblique allows the horizontal meridian to leave the plane *c c* and assume position *h m*. Astigmatic corrections for such eyes will be faulty unless the axes of the cylinders are shifted in harmony with the necessary binocular torsioning. Eyes that are not level are eyes that can never be made strong, although the proper correction of focal errors may help them. Of such eyes it may be said: "One eye is better than two," however free from focal error and muscle imbalance.

Eyes are never torted except in the interest of binocular single vision, and even then it is at the expense of correct orientation. There are but two conditions that cause torsioning: First, when one eye is higher than the other, there must be a torsioning of both eyes in the same direction, as shown in Figure 3; second, in non-parallel oblique astigmatism, there must be torsioning of the two eyes, but in opposite directions. The first kind of torsioning makes an horopteric plane possible; in the second kind of torsioning there is binocular single vision, but there can be no horopteric plane. The cor-

rection of astigmatic eyes that are normally set relieves the torsioning and makes the true horopteric plane possible.

All that has been said in this paper pertains to eyes whose muscles have normal tonicity; but it has been shown that there are abnormal conditions of the eyes in which the normal muscles do abnormal work.

Heterophoric eyes can not have binocular single vision and correct orientation unless the weaker muscle of an unbalanced pair shall receive supplemental power from a reserve brain center—the fusion center for that muscle. To relieve the fusion centers of abnormal activity, and so to relate the two eyes that there may be volitional obedience to the laws governing binocular rotations, the ideal thing to do is to give equal tonicity to the opposing muscles of every pair.

In ocular rotation the visual axis, which is the chief line of direction, being a diameter of the eye, takes the position of other diameters in succession until, finally, it reaches the second point of view. The diameter of the eye that pointed to the second point of view, before the rotation began, must have connected that point and its retinal image, hence must have been the visual line, or line of direction, for that retinal point. All lines of direction, or visual lines, cross the visual axis at the center of retinal curvature, and are radii of retinal curvature prolonged.

Error in location of the posterior pole of the eye not only led to error in teaching as to ocular rotations, but it also led to error in teaching as to the law of direction. Lines of direction are not the axial rays of light, but they are radii of retinal curvature prolonged.

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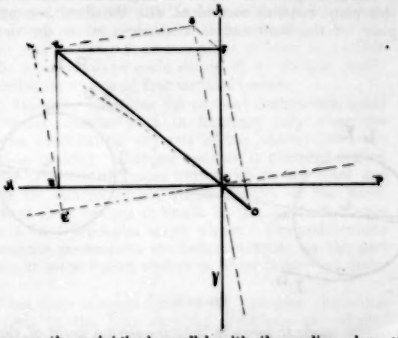
DISCUSSION.

Dr. George H. Price, Nashville, confined his remarks to a single feature of rotation, in which there is the combined action of two recti and one oblique, namely, the superior rectus, the external rectus, and the superior oblique. The eye, he said, is so placed in its orbit that only two muscles concerned in its movements, when correctly attached, move the eye in a direct line, namely, the internal rectus and the external rectus, and even this direct line of action only holds absolutely good so long as the eye is rotated directly in or out in the horizontal plane, for whenever the rotation is above or below this plane, in or out, then these muscles tend to rotate the vertical meridian toward or from the median plane of the head. The superior rectus is attached to the globe at an angle of 23° to the visual axis, consequently when this muscle acts alone, the eye being in the primary position, the tendency is both to elevate and to rotate the vertical axis in at its upper extremity, thus producing torsioning. In order to overcome this torsioning, the inferior oblique is brought into action, and by its contra-torting or outward rotating effect maintains the parallelism of the vertical axis with the median plane of the head. The restraining influence to torsion by the inferior oblique grows less and less as the eye is turned outward by the external rectus, and when the eye reaches a position of 23° outward rotation or abduction it is lost, for then the superior rectus muscle is acting in the plane of its attachment, hence is a direct elevator, but so soon as it passes this point, it then begins to turn or to tort the vertical axis out, which increases as the eye turns outward and upward. In addition to the action of the superior rectus, the external rectus, when acting in a plane above the horizontal, also tends to rotate or to tort the vertical axis out by reason of the fact that it no longer acts in its own plane, but being moved upward at its point of attachment to the eye, it depresses the outer extremity of the transverse axis, and consequently aids the superior rectus in causing the outward tilting of the vertical axis. This action of the external rectus under the double impulse to turn the eye out and up is positive, and as soon as the eye, under the stimulus to the superior rectus starts upward, and would rotate inward except for the tonic restraining influence of the inferior oblique, the external rectus immediately begins its positive response to the stimulus of abduction, and at the same time, by reason of its changed position from the horizontal plane to one above, it also depresses the outer extremity of the horizontal axis, which action is also positive, and at once overcomes the tonic action of the inferior oblique (which parallels the vertical axis) and hence causes an out-turning or torting of the vertical axis. In order to overcome this outward torting of the vertical axis, the superior oblique is called into action, and by its positive inward torting effect on the vertical axis, maintains the parallelism of this axis with the median plane of the head. From this we see that the rotation of the eye, except directly inward or outward in the horizontal plane, involves a complex muscular action in order to maintain correct orientation, which if lost by faulty attachment of the muscles to the eye, or failure of the muscles to perform their proper functions, leads to serious complications, resulting in cyclophoria and consequent discomfort to the patient.

In order to demonstrate these actions Dr. Price presented a diagram showing the actions of the superior rectus, the external rectus and the superior oblique, involved in moving the right eye upward and outward at an angle of 45°, from the primary position of looking directly ahead. In this figure C is the anterior pole, A V is the vertical axis, H P the horizontal plane. C F is the resultant of the action of the superior rectus and the inferior oblique, under their normal tonicity, and is



consequently maintained parallel with the median plane of the head, when the eye is at rest, or when turned directly upward. C S represents the magnitude and line of direction of the force of the superior rectus, when turning the eye upward and torting it outward in conjunction with the external rectus muscle in rotating the pole C upward and outward 45°. C E represents the magnitude and direction of the force of the external rectus muscle, when rotating the pole C, upward and outward 45°. C O represents the magnitude and direction of the force of the superior oblique, in opposing the combined torting action of the superior rectus and the external rectus in rotating the eye in an upward and outward direction of 45°.

Having established the three forces, their magnitude and direction, it is only necessary to combine these in order to show the magnitude and direction of the resultant of all these forces. Let us now take the forces C S and C O and on these, according to the law of the composition of forces, construct the parallelogram C S F O. Then from the point C draw the diagonal C, F. This diagonal, according to the law above referred to, represents the magnitude and direction of the forces concerned in lifting and torting the eye in its movements, and C F is now parallel with the median plane of the head. In this action of overcoming torsion the horizontal plane, which would be depressed under the influence of the superior and external recti, if not opposed by the superior oblique, has been kept in its proper position, and consequently the out-turning or abducting effect only of the external rectus

muscle, represented by C E, remains to be combined with the resultant action of the superior rectus and the superior oblique, which is represented by C F. On C F and C E we construct a parallelogram C E R F, and from the point C we draw the diagonal C R, which is the resultant of the forces C E and C F, but as C F is the resultant of the forces C S and C O, then C R represents the resultant action of the three forces, C S, C O and C E, all acting simultaneously on the point C, and represents the magnitude or extent and direction of the movement of the point C. In other words, the action of the superior and external recti and the superior oblique muscles, simultaneously acting in turning the eye upward and outward at an angle of 45°, would move the anterior pole C along the line C R to the point R, while at the same time the vertical axis is kept parallel with the median plane of the head, cyclophoria is prevented and correct orientation is maintained. Dr. Price said that this action is practically the same as that of one muscle so attached to the eye that its plane of action would lie in the line C R, the resultant of the combined forces acting in this movement of the right eye.

DR. MARK D. STEVENSON, Akron, Ohio, said that if the eyeball were rotated vertically upward or downward 90 degrees along the plane of the vertical meridian, what had been the horizontal meridian in the primary position becomes vertical in coronal section in the secondary position, although the vertical axis bears the same relation to the horizontal in both cases and remains unchanged. If the right eye changes its direction from an object straight in front to one up and to the right in the plane of meridian 135 degrees, it will rotate around an axis perpendicular to this plane and lying in Listing's plane in the direction of meridian 45 degrees. The meridian at 135 degrees, which lies in the same direction as the plane formed by the two objects and the center of rotation, does not change its direction and could not do so as it would require motion about an axis perpendicular to the plane in which the axis of rotation lies, which is impossible. However, he said, the direction of the vertical meridian in this case does and must change. The upper end of it inclines to the right side. If the eyeball were to tort in order to keep the vertical meridian in its original plane, the meridian at 135 degrees along which the visual axis moves between the two objects would be changed, which is not possible as before stated. This can be readily understood, he declared, by drawing cross lines at right angles, one vertical and the other horizontal, on a rubber ball; a knitting needle is placed through the intersection of the two lines to represent the line of fixation or fore and aft axis of the ball, a weight being suspended by a string on the end of this needle so that the string will always be vertical, and then the ball is rotated about another needle placed equatorially through it at axis 45 degrees. A person facing such a ball with the line joining the centers of rotation of his two eyes in the same plane as the meridian along which the fore and aft axes of the observed ball is moved or the meridian at right angles, could move his head in the same direction, up, to the right, etc., always facing the ball, and his eyes would remain in the same plane. But if his eyes were in the same plane as any other meridian in the primary position he would have to turn his head after the rotation of the ball to keep his eyes in the plane of the same meridian. These facts are also easily studied, Dr. Stevens said, by means of linear after images.

DR. F. H. VERHOEFF, Boston, said that a number of Dr. Savage's axioms will not be regarded as self-evident truths by those who have done experimental work in physiologic optics. For instance, one of the axioms is that the eyes undergo torsion only in the interest of binocular single vision. As a matter of fact, it has been repeatedly demonstrated that the eyes undergo torsion in direct opposition to the interest of binocular single vision, as for example in convergence with elevation of the visual plane. Dr. Verhoeff said that seven years ago he showed that the eyes are unable to undergo torsion in the interest of binocular single vision in the same sense that they can overcome lateral deviations. He showed that the experiments that were thought to demonstrate such torsional power were dependent on physical fusion of disparate images, on which the preception of stereoscope relief largely depends.

Another of Dr. Savage's axioms, if true, he said, should be of the highest scientific interest. It is that when one eye is higher than the other, in binocular vision both undergo torsion in the direction of the lower eye. Dr. Verhoeff asked Dr. Savage on what evidence this statement is based. On *a priori* grounds Dr. Verhoeff would say that such rotation does not take place. The chief effect of this symmetry in position of the two eyes would be on the positions of the images of an object lying within or beyond the fixation point, of which images one would be higher than the other. If this is remedied at all, it seems to him more likely that it would be accomplished by tilting the head. Still another questionable axiom, he said, is that the correction of astigmatic eyes that are normally set relieves the torsioning and makes the true horopteric plane possible. Aside from the lack of proof that such torsioning ever occurs, cylindrical lenses which correct astigmatism fail to do away with distortion. Owing to the fact that they are placed a considerable distance from the cornea they overcorrect the original distortion and produce distortion of an opposite kind. This, he declared, explains the difficulty always experienced by patients in becoming accustomed to high cylinders.

DR. LUCIEN HOWE, Buffalo, said that the subject of muscles is apt to become confused, and that the opthalmologists are apt to become a little confused in the discussion of them. He said that physicians forget one very important action that takes place in normal convergence and accommodation, they ordinarily think only, when looking at the near point, of accommodation and convergence, and forget that Landolt brought out twenty years ago that with convergent action the vertical axes tip out. It is the neglect of this that is one of the reasons why physicians are confused as to exophoria and many of the other phorias.

DR. G. C. SAVAGE, Nashville, said that many years ago, Helmholtz was walking in the woods near Heidelberg with one of his students, who said to him, "I have no trouble with your 'Physiologic Optics,' except the chapter on 'Movements of the Eyes.'" Helmholtz replied that he was not astonished, and told the student to leave that chapter alone, that he intended to rewrite it and make it clearer. This Helmholtz never did. The explanation for his not having written clearly on the subject, Dr. Savage said, is not difficult to find. Helmholtz located the anterior pole in the center of the cornea, and the posterior pole between the macula and the disc. If he had located the poles properly, he would have written a clear chapter on ocular rotations, one easy to be understood. What he did write has been a source of confusion. The center of the macula is unquestionably the posterior pole. This fundamental truth, not known to Helmholtz, makes the whole study of ocular rotations easy.

Dr. Savage made three statements with which he said all ophthalmologists agree: "First, the mind will tolerate imperfect images; second, the mind will tolerate incorrect orientation; but, third, the mind will not tolerate diplopia." After repeated efforts Dr. Savage has formulated a law against diplopia which he believes is as brief, simple and clear as it can be made. It is the law of binocular rest and motion, and is as follows:

> The two eyes, whether at rest or in motion, must be so related to each other that their visual axes and their horizontal retinal meridians shall lie in the extended movable plane of the horopter, and that the visual axes shall intersect at the point of view, otherwise binocular single vision with correct orientation would be impossible. The planing of the visual axes is accomplished by the superior and inferior recti muscles; while the planing of the horizontal retinal meridians is effected by the oblique muscles. These two groups of muscles help each other in planing the visual axes, but oppose each other in planing the horizontal retinal meridians.
>
> When the eyes are in their primary positions the visual axes are converged to the point of view, by the internal recti muscles, but when in motion an internus and an externus move the visual axes in the plane of the horopter toward the second point of view and the internal converge them at this point, the moment the horopteric plane is brought to it.
>
> When eyes endowed with normal muscles are in their primary positions, the horizontal retinal meridians are planed, and the visual axes are planed and converged, by muscle tonicity alone. When in any other position, or when in motion, from two to six of the twelve ocular muscles must be in a state of contraction, under the influence of from one to three of the nine conjugate brain centers.
>
> When two muscles of any pair are unequal in tonicity, whether the eyes are still or in motion, a fusion center must be constantly acting on the weaker muscle. When eyes whose muscles are equal in tonicity are being rotated obliquely, the conjugate or volitional

centers must be aided by one or more of the twelve fusion centers. In the interest of binocular single vision, so far as the recti alone are concerned, and in the interest of both binocular single vision and correct orientation, so far as the obliques are concerned.

Dr. Savage exhibited a surface illustrating binocular single vision which he said is the only one that has ever been made. Dr. Manning Brown, a former student of Dr. Savage, had it made for him. By means of this device, the horopteric surface, binocular rest and motion can be easily understood. In regard to Dr. Stevenson's rubber ball and knitting needle, Dr. Savage said that of course the eye would tort when rotated on an oblique axis, if it were not for the oblique muscles. The oblique muscles have set for them the task of keeping the horizontal retinal meridian in the movable plane of the horopteric circle, whether in monocular or in binocular vision, and faithfully do they accomplish it.

THE TRANSMISSION OF ROCKY MOUNTAIN SPOTTED FEVER BY THE BITE OF THE WOOD-TICK (*DERMACENTOR OCCIDENTALIS*).*

H. T. RICKETTS, M.D.
CHICAGO.

In THE JOURNAL, July 7, I reported briefly my success in transmitting Rocky Mountain spotted fever to the guinea-pig and monkey. With these results in hand, it at once became apparent that a means had been provided by which to test the theory of transmission by the wood-tick, a theory which was primarily advanced by Wilson and Chowning. It was my first aim to establish, beyond the opportunity of doubt, the susceptibility of the animals mentioned, and it was only after this susceptibility had been determined by inoculation from two different patients that the study of the tick as an intermediate host for the parasite was taken up.

On June 19 a small female tick was placed at the base of the ear of "Bradley" Guinea-pig 1. This guinea-pig had been inoculated intraperitoneally on June 11 with three cubic cm. of defibrinated blood from the patient, Bradley, and died with characteristic symptoms on June 23. After having fed on the infected guinea-pig for two days, the tick was removed, placed in a ventilated pill-box for two days more, and on June 23 was attached to the base of the ear of a female guinea-pig weighing 300 grams. After an incubation period of three and one-half days, the temperature of the animal rose to 104.2, gradually ascended to 106.4, near which point it remained for seven days, when it gradually returned to normal. The bite of the tick in this instance seemed to be very virulent, the whole ear becoming very much swollen, indurated and cyanotic, and a slough almost one-half inch in diameter, which developed in the vicinity of the bite, eventually separated.

The animal exhibited the following course of fever:

June 23, a.m., 102.5; p.m. 102.2.	July 1, a.m., 104.6.
June 24, a.m., 101.9.	July 2, a.m., 105.2.
June 25, a.m., 102.8; p.m., 103.9.	July 3, a.m., 104.7; p.m., 105.
June 26, a.m., 102.4; p.m., 103.6.	July 4, a.m., 104.7; p.m., 103.1.
June 27, a.m., 102.5; p.m., 104.2.	July 5, a.m., 103.8; p.m., 103.9.
June 28, a.m., 106.4; p.m., 105.2.	July 6, a.m., 103.4; p.m., 103.5.
June 29, a.m., 105.6; p.m., 105.8.	July 7, a.m., 102.5.
June 30, a.m., 104.8; p.m., 106.1.	Recovery.

Seven days after inoculation, the external genitalia became swollen and congested, and this condition became more marked until the twelfth day, when it began to subside. At no time were distinct hemorrhages in the genitalia or other parts of the skin to be seen. The course of the disease was exactly similar to that seen in a number of other guinea-pigs which ran a severe course, with eventual recovery. The absence of a hemorrhagic condition in the skin, or of a discoverable roseolar eruption, throws no doubt on the success of the transfission, since, as shown by other experiments, a perceptible eruption does not appear invariably in spotted fever as it is produced in the guinea-pig experimentally.

It was not possible to attempt the transmission of the disease from this animal to others, because of the lack of guinea-pigs at the time.

As controls I have two experiments in which uninfected ticks fed on normal guinea-pigs without causing a rise in temperature; furthermore, two guinea-pigs, which lived for two weeks in the box occupied by the infected animal showed no abnormal temperature, a fact which argues against the transmission of the infection by mere association with excretions of infected animals.

The result of this experiment brought very forcibly to my mind the probable part which the tick plays in the infection of man and shows the necessity of repetition of the work with a more abundant material. In view of the result which I had obtained I was not surprised to note the recent report of Dr. King[1] of the U. S. Public Health and Marine-Hospital Service, who, starting with material which I had given him, accomplished transmission in the same manner.

Hasty conclusions as to the question of tick transmission in relation to the infection of man are, by all means, to be avoided until such a time as the experiments can be repeated and the life history of the infection worked out more thoroughly. This phase of the subject, in common with others, is being studied by me, the infection still being maintained in animals for these purposes.

It is hoped that some of these questions may be settled satisfactorily before the advent of the disease next year. At all events the knowledge so far gained may well be taken into account in instituting prophylactic measures against the disease.

*This work has been done in part under a grant made by the American Medical Association through the Committee on Scientific Research.

Clinical Notes

MIXED MALARIA AND TYPHOID FEVER.

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The relatively small number of reported cases of mixed infection resulting from the simultaneous occurrence of the *Plasmodium malariæ* and *Bacillus typhosus* in the same patient is sufficient pretext for the relation of the following case, which presents many features of unusual interest and which, furthermore, may prove to those skeptical as to the possibility of a double infection, that the same host may, and sometimes does, entertain two guests whose morphologic appearance and biologic habits so widely differ:

Patient.—On June 2, 1905, I was called to see Mrs. A. C. S., Scotch, aged 35. She complained of frequent micturition, accompanied by vesical tenesmus. The marked irritability of the bladder was most troublesome at night, requiring the patient to leave her bed every few minutes. Heat and opium suppositories afforded some relief by inducing sleep.

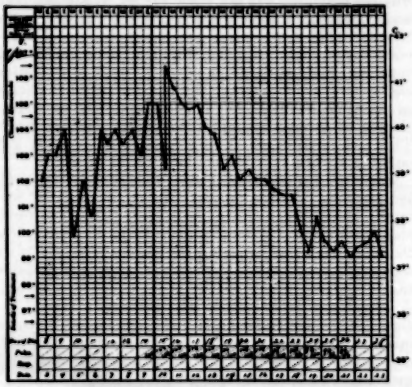
Course of Disease.—The next morning a chill caused me to be sent for. I was unable at the time to determine whether its occurrence was due to a cystitis or to some oncoming disease. The patient now complained of headache, pain in small of back, nausea, abdominal tenderness, and extreme nervousness. The temperature at this time was 103 by mouth. As a routine practice in all such cases of doubtful nature, I made an examination of the blood and found that it contained malarial organisms in abundance.

1. Public Health Reports, July 27, 1906.

Calomel and salts were ordered, and quinin in full doses. The temperature promptly dropped to 99.8, and remained thereabout until the afternoon of June 6, when it reached 104. Calomel and salts were again given and quinin in large doses until the patient was thoroughly cinchonized. The temperature remained about the same, with but little variation, for two or three days, mild delirium then set in and the patient seemed to be getting worse.

On the morning of June 10 the temperature in the rectum was 105; skin was flushed and dry, and delirium was becoming violent. There had been constipation, but this now changed to a mild diarrhea.

For the high fever, which was entirely uninfluenced by cold baths, I gave one powder consisting of acetanilid grs. v, quinin grs. iii, caffein citrate grs. ii. About three hours later I was hurriedly called to see the patient and found her in a state of collapse, being cyanosed, comatose, bathed in sweat, with pulse 102, irregular and weak, and temperature 102.4. Respiration was greatly embarrassed. Artificial heat and stimulation brought about rapid and satisfactory reaction. To my surprise within three hours the temperature had



climbed to 106.4, and delirium became so violent as to cause the nurse and her husband to use restraint to keep her in bed.

For the first time my attention was attracted by a pronounced macular eruption over the abdominal region, this discovery, with the fact that quinin was doing more harm than good, caused me to suspect a double infection. Antimalarial treatment was immediately abandoned; further blood examination gave positive reaction by Widal's method, and the urine showed presence of 0.2 per cent. albumin, tube casts, and typhoid bacilli in almost pure culture. Menstruation, which had been suppressed for six weeks, now came on freely. Choosing between two evils, cold baths and packs were continued, and now seemed to control the temperature which gradually, though slowly, declined to normal, the menstruation continued three or four days, uninfluenced by the fever or by the cold water. The delirium continued active and at 2 o'clock on the morning of June 14 took a rather unusual course; the patient sat bolt upright in bed and to the surprise of the family, sang, in broadest Scotch, "Annie Laurie."

A slow, but satisfactory recovery was made. Cystitis at times proved troublesome.

In reviewing this report it will be noted that the temperature caused by malarial organism was promptly reduced to that point (99.8, probably occasioned by the typhoid bacilli) by quinin. Further treatment by quinin seemed to do more harm than good. The peculiar type of delirium may have been, in part, due to full doses of quinin, suppressed menses, and typhoid fever. The cystitis was undoubtedly due to the presence of typhoid bacilli.

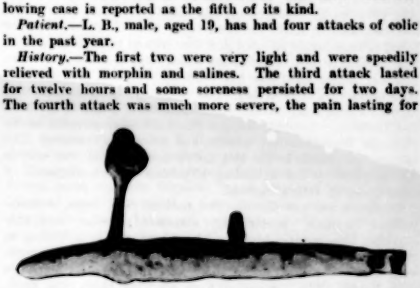
POLYPI OF THE APPENDIX.

GEO. W. PRESSLY, M.D.
CHARLOTTE, N. C.

Kelly, in his exhaustive work on the appendix, reports the first four cases of polypi of the appendix; before this no mention of such cases can be found in the literature. The following case is reported as the fifth of its kind.

Patient.—L. B., male, aged 19, has had four attacks of colic in the past year.

History.—The first two were very light and were speedily relieved with morphin and salines. The third attack lasted for twelve hours and some soreness persisted for two days. The fourth attack was much more severe, the pain lasting for



Appendix everted on blade of artery forceps. Natural size.

thirty-six hours and the tenderness was troublesome for more than a week.

Operation.—Two months after the last attack he was operated on and the appendix was found much distended, with liquid feces which was thought to be pus, but on eversion the two polypi shown in the illustration were found, the long pedicle of one allowing it to act as a ball-valve in closing the opening into the bowel. The mucous membrane was much thickened with several eroded pits. The peritoneum was apparently normal. Recovery was uneventful.

St. Peter's Hospital.

A CASE OF ACETANILID POISONING FROM ABSORPTION.*

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While acetanilid poisoning and addiction to the drug are, unfortunately, but too common, the following case is of interest, first, because the poison resulted from the local application of the drug; second, because the patient was entirely ignorant of its effects and did not associate the constitutional symptoms with the local condition for which the drug was used; and, finally, because, in spite of its protracted use, the drug had not produced a habit and was withdrawn at once without any difficulty.

Cyanosis, sudden heart weakness and other symptoms of depression have frequently been observed following the application of acetanilid to the skin, particularly after extensive burns, but the first case of chronic poisoning was recently reported in an exhaustive article on the subject by Herrick and Irons,[1] who state that their case is the only one, so far as they have been able to ascertain, "in which chronic acetanilid poisoning resulted from absorption through the skin."

The history of my case is as follows:

Patient.—M. D., female, aged 37, was admitted to my service at the Polyclinic Hospital, June 19, 1905. The only item of interest in the family history is that the mother died of pulmonary tuberculosis. The patient always enjoyed good health until seven years ago, when she had an attack of influenza, since which time she has had recurrent attacks of the disease

* Read before the Philadelphia County Medical Society, May 23, 1906.

1. THE JOURNAL A. M. A., Feb. 3, 1906, p. 351.

every winter. She has suffered from varicose veins most of her life. Eleven years ago an ulcer developed on the right leg which grew worse after each succeeding pregnancy. She has had five children and no miscarriage; the youngest child died two years ago.

The patient states that the present illness began eleven months ago, in July, 1904, with an attack of influenza, which was followed by "indigestion and kidney trouble," from which she continued to suffer for some time. She did not recover her usual health during the fall and winter, and in February, 1905, had another attack of influenza which kept her in bed for two months. Since then she has been up and around the house, with occasional days in bed. She says that she is nervous and worried about small things and complains of pains in the head and dizziness. Recently she has also suffered from pains in the abdomen, breathlessness, nausea, and occasional vomiting. She has lost 70 pounds in the last eleven months. She was sent to the hospital by her attending physician with a diagnosis of some form of severe anemia.

Condition on Admission.—The patient is a large, well-developed woman, moderately emaciated; color markedly cyanotic, conjunctivæ bluish. There was visible pulsation in the carotids and in the episternal notch. The heart sounds were weak, the first sound short and valvular; no murmurs were heard. The percussion note over the lungs was good. Tactile fremitus was present on both sides, but was considerably increased over the upper portion of the right lung, where vocal resonance was also increased. The abdomen was flabby and slightly tender on pressure. A mass was palpable above and to the right of the umbilicus. The spleen and liver were not enlarged. There were no glandular enlargements; the veins of the left leg were prominent and somewhat tortuous. A scar about the junction of the middle and lower thirds indicates the former presence of an ulcer at that point. The right leg was the seat of a large deep ulcer, which was almost annular and occupied the lower third of the leg. The discharge from the ulcerating surface was profuse and offensive. It was learned on inquiry that this ulcer, the existence of which the patient had carefully concealed from her attending physician, had been treated twice a day with acetanilid powder for the last eleven months. The acetanilid was bought at the drug store, half an ounce at a time, without a physician's prescription, the patient having been advised to use it by a friend who extolled its virtues in veterinary practice.

Urine: Examination of the urine on admission was as follows: Dark amber color, acid reaction; specific gravity 1028; no albumin nor sugar; slightly cloudy sediment. Microscopic examination showed phosphates, calcium oxalates, and epithelium.

Blood: The blood was examined by Dr. John M. Swan the day after the patient's admission, with the following result: Dark in color, flows slowly, coagulates quickly. Red blood cells 4,370,000, leucocytes 20,960; ratio 1-220. Hemoglobin, 53 per cent.; color index, 0.56. No difficulty was experienced in obtaining the hemoglobin reading. A differential count of leucocytes showed the following percentages: Polymorphonuclear neutrophiles, 95.2 per cent.; lymphocytes, 2.8; transitionals, 1.6; basophiles, 0.4.

Treatment and Result.—The diagnosis was suspected when the drop of blood was drawn for examination, and was confirmed by the history. The acetanilid was withdrawn at once and completely. The leg ulcer was dressed with an antiseptic dressing until the discharge ceased. The patient was given Blaud's pills and strychnin. One week after admission her appearance was greatly improved; the cyanosis had subsided, the complexion was still pale and sallow; but there was some color in the cheeks and the conjunctivæ were less blue. The tongue was moist, pale and slightly coated. Heart action was regular and the quality of the first sound was greatly improved. A faint systolic puff was heard at the pulmonic area. Pulsation was still visible in the carotids and in the episternal notch; no venous hum was audible.

An Ewald test breakfast was given at this time. The amount of stomach contents withdrawn was 75 c.c. and showed a total acidity of 55, free hydrochloric acid 15. On June 30, eleven days after admission, the blood count was as follows: Erythrocytes, 6,350,000; leucocytes, 9,920; ratio, 1-641. Hemoglobin, 63 per cent.; color index, 0.49 per cent. There were microcytes and macrocytes; no nucleated reds. The differential count showed the following percentages: Polymorphonuclear neutrophiles, 74.2 per cent.; lymphocytes, 13.8; transitionals, 6.2; eosinophiles, 4.6; basophiles, 1.2.

The patient was discharged July 15, 1906, sixteen days after admission, very much improved. During her stay in the hospital the temperature ranged from 97.4 to 99 F., being normal most of the time. I saw the patient a short time ago and learned that her general health had continued to improve after she left the hospital. She has not used acetanilid since.

DISCUSSION.

The diagnosis in this case presented no difficulties, as it was at once made clear by the discovery of the ulcer and the history given by the patient, who had not connected her general symptoms with the local condition, having, in fact, concealed the existence of the leg ulcer from her attending physician, because, she said, she feared he would send her to a hospital. This explains why the diagnosis was not made earlier, as she had been under observation some weeks before she was sent to the hospital. The symptoms in this case were general weakness, loss of flesh, headache, dizziness, some nausea and vomiting, marked cyanosis, dyspnea, weak heart action and general nervousness. The test for paramidophenol in the urine, mentioned by Herrick and Irons as characteristic of chronic acetanilid poisoning, was not made. This test requires no elaborate chemical methods and ought to prove a valuable one in doubtful cases.

Some individuals exhibit great tolerance for the coal-tar products. In the present case the quantity of acetanilid absorbed can only be estimated; the patient probably used about 1½ ounces each week, or a little less than 2 drams a day, applying the powder regularly twice a day. As the ulcerated surface was large, it is probable that a relatively large quantity of the drug was absorbed. A man comes to my clinic who presents a typical example of the acetanilid habit. He says he has taken as much as three 25-cent bottles of bromo-seltzer in a day, or 4½ ounces by weight, and as, according to analysis,[2] each ounce of bromo-seltzer contains nearly 11 (10.99) grains of acetanilid, this patient sometimes takes 50 grains of acetanilid a day. In the case here reported the drug was withdrawn at once without the slightest difficulty. No troublesome nervous symptoms were observed, the patient had no craving whatever for the drug and improvement began on the day the patient was admitted and went on uninterruptedly to recovery. The second patient referred to returns to the use of the drug from time to time, although he has been able to resist it for as long as a week at a time and is gradually improving. As he is not under constant observation, no definite statement can be made about his case.

At first the blood picture was that of a secondary anemia with a low color index. This agrees with the findings in other reported cases. The leucocytosis in the first blood count was 21,000; in Herrick and Irons' case the leucocyte count was 12,000, while Stengel reports a leucocytosis of 19,000 in one of his cases. The increase chiefly affects the polynuclear leucocytes. The blood count made eleven days later showed an absolute increase of hemoglobin, but a lower color index, due to the excessively large number of red blood cells. This feature of polycythemia is also mentioned in a case of acetanilid poisoning reported by Cabot. The influence of the large suppurating surface of the leg ulcer on the condition of the blood must, however, be borne in mind.

2. THE JOURNAL A. M. A., Feb. 10, 1906, p. 454.

BROMO-SELTZER AND ORANGEINE.

Acetanilid is concealed in many proprietary and patent preparations that are freely sold to the public without a physician's prescription. One of the commonest offenders, especially among educated people, is bromo-seltzer, as the name is misleading, and it is not generally known that the preparation contains such a relatively large proportion of acetanilid.

Another well-known and pernicious preparation that has several deaths to answer for is orangeine. It is in the form of headache powder and is extensively advertised in the daily papers and in a familiar street-car advertisement showing two faces, intended to represent "before" and "after taking"; one a cerulean blue, the other with the rosy blush of health. If the manufacturers would reverse these two faces and add a skull and crossbones to the advertisement they would give the public a more correct idea of the true nature of their deadly preparation.

INGUINAL HERNIA OF THE BLADDER.

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INDEPENDENCE, IOWA.

Inguinal vesical hernia, or inguinal hernia of the bladder, is necessarily rare, owing to the fact that the fundus of the bladder, under normal conditions, rises above the brim of the pelvis only when the cavity of the bladder is distended with urine. By adhering to other organs the bladder may, however, be dragged out of its normal position, and give rise, in part or entirely, to a ventral hernia, a femoral hernia, an inguinal hernia, a peritoneal hernia or a scrotal hernia.

Henry O. Marcy, in his excellent work on "Hernia"[1] refers to cases of inguinal hernia of the bladder reported by Percival Pott, Cooper, Scarpa, Lawrence, Clement, Horace E. Marine and Arthur F. Norton. In some of these cases the hernia had reached the lower part of the scrotum and had to be squeezed in order to empty it of the urine it contained. Some of the complications observed were decomposition of the urine in the hernial part of the bladder, the formation of calculi in the same cavity, and the rupture of the hernial sac from excessive pressure. In some cases the testicle on the side of the hernia was compressed and atrophied. In the case reported by Norton the opening in the abdominal wall was so large as to allow the cecum, the vermiform appendix, a part of the ascending colon, a part of the small intestines, and the bladder to pass into the greatly distended scrotum. In the case reported by Clement the entire bladder had passed through the inguinal canal into the scrotum and had the appearance of a large hydrocele. In Plummer's[2] paper a case is reported, and reference made to contributions by Curtis, Shepherd and Sonnenberg.

History.—The patient, J. W., aged 60, a farmer, has suffered from an inguinal hernia on the right side for several years. The cause of this hernia could not be ascertained. For a long time he was able to reduce it with no difficulty, but found that the reduction gradually became more and more difficult. His health is otherwise good. He was admitted to the Independence State Hospital for the Insane Oct. 5, 1905, showing at that time symptoms of senile dementia.

Examination.—The physical examination was negative, except that the right knee was enlarged from an attack of rheumatism, the left arm had been broken several years previously about six inches above the wrist, the radial arteries showed arteriosclerosis, the co-ordination in the hands was poor, the pupils were sluggish, the knee reflex was exaggerated, and blind, bleeding piles had been present for several years. The muscular development and muscle tonus were found very good. Nov. 16, 1905, he complained of pain over the hernia. I then tried to reduce it, but found this impossible. The tumor mass which was felt over the inguinal canal was very hard in consistence, smooth, and but slightly movable. It was in size about three inches long, two inches wide and one inch in ventro-dorsal diameter. Pressure on it did not perceptibly diminish its size, nor did coughing cause any impulse in it. It was rather painful when pressed or moved. The patient's bowels moved as usual, but he had occasionally some difficulty in passing his urine. It was deemed best to operate, and Drs. A. G. Shellito and Fred Agnew of Independence, Iowa, were called in for this purpose.

Operation.—An incision three inches long was made over the tumor mass and the inguinal canal was laid open. In the inguinal canal was found a hard, irregular mass of tissue in size a little larger than an egg, and covered by the hernial sac. This sac was cut and with some difficulty peeled off. It was seen that the inguinal canal was considerably dilated and that the internal inguinal ring constricted the extruded mass. This mass was found to be well supplied with muscle fibers and not so smooth as the surface of the intestines usually found in hernias of this place. After enlarging the internal inguinal ring sufficiently to admit one finger, it was found that the extruded mass was continuous with the bladder. The hernial part of the bladder, which was very dark and much congested with blood, was pushed back into the abdominal cavity and the opening closed according to the Bassini method—the fascia of the conjoined tendon was sutured to the lower border of Poupart's ligament under the cord and the external oblique muscle was sutured to the upper border of the ligament over the cord. The bladder was not injured, as was shown by the fact that there was no leakage of urine in the wound. After suturing the skin, the wound was dressed with aseptic gauze, fixed in place by collodion. It was much feared that the dark, constricted area, which was easily outlined on account of its color, might become gangrenous and thus cause a perforation of the bladder, but fortunately this did not occur.

Postoperative History.—The patient came out of the anesthesia in a very good condition and very soon fell into a deep sleep, which lasted until the next morning. During the following days his temperature rose gradually until it reached 102 F., on November 18 and 19, then decreased slowly, there being an evening rise of about 1 degree, until it reached normal on December 1. The variations in the pulse and in the respiration corresponded quite closely to those in temperature; the pulse reaching its greatest rapidity November 18, when it was 110 a minute.

Urine: The examination of the urine on November 18 showed the following: Cloudy; color, yellow; reaction, acid; specific gravity, 1023; a trace of albumin, no sugar, some pus cells, epithelial cells, and uric acid crystals; a few granular and hyalin casts. During the first two weeks it remained cloudy, and contained both pus and epithelial cells, granular and hyalin casts, though in smaller number. The trace of albumin disappeared in a few days.

Subsequent History.—November 18 the patient vomited twice and complained of pain in his left side. On examination his abdomen was found quite markedly tympanitic, and in the afternoon of the same day he passed a large amount of gas and had a small, liquid bowel movement. Though he had been given cascara freely, he was now given an enema, which was followed by a liquid bowel movement. On dressing the wound, November 19, some pus was seen in it, and a few of the stitches were, therefore, removed. He was then for several days given small doses of magnesium sulphate at frequent intervals, and the head of the bed was raised about two feet. The bowel movements became more copious and frequent, and the pain in the side disappeared. A moderately thick, light-yellow secretion came from the wound for about two weeks and gradually disappeared. November 28 he was given a full diet, and recovery from then on was rapid. All signs of her-

1. New York, 1872.
2. THE JOURNAL A. M. A., July 22, 1905.

nia were absent and, as his mental condition had also improved slightly, he was, after a few weeks, taken home on parole. The scar seemed strong, and the probability is that he will not again suffer from a hernia in the same place.

DIAGNOSIS.

Some of the symptoms which have been observed in cases of inguinal hernia of the bladder are:

1. A difficulty in passing the urine.
2. A change in the size of the hernia, depending on the amount of urine in the bladder.
3. A desire to urinate following pressure on the hernia.
4. A catheter may at times be passed through the urethra and into the hernia.
5. Injection of air or water into the empty bladder may cause an enlargement of the hernia.
6. On reduction of such a hernia the accompanying omentum or intestine may quite easily be pushed back into the abdomen, but there frequently remains a small, doughy mass which represents the extruded part of the bladder.
7. In the case here reported the tumor mass was much harder than most ordinary cases of inguinal hernia.
8. In some cases there is fluctuation in the tumor mass.

During the operations for relief of this condition the following facts have been observed by several writers:

1. The difficulty of identifying the structure of the hernia, when seen for the first time. There is consequently danger of cutting into the bladder, mistaking it for other tissue.
2. An unusual amount of fat in the inguinal canal.
3. The large size of the external inguinal opening.
4. The difficulty in separating the true hernial sac from the tumor mass.
5. The recognition of the muscular tissue in the wall of the bladder.
6. The possibility of passing a urethral catheter into the hernia.
7. The frequent difficulty in finding the neck of the true hernial sac.
8. The fact that hernia of the bladder is found nearer the median line than the true hernial sac.
9. The fact that when normal, the wall of the bladder is thick and firm.
10. When the extruded part of the bladder is ruptured or incised, urine frequently flows out, and, in such case, a small catheter can occasionally be passed into the bladder through this artificial opening.
11. The frequency with which intestinal and omental hernias accompany the hernia of the bladder.

Radical operation is the only rational treatment.

A CASE OF BLACK TONGUE.*

HUGO A. KIEFER, M.D.,
LOS ANGELES.

Patient.—J. G., aged 21, a Servian by birth, and a cook by profession, was admitted to the hospital Feb. 6, 1906, suffering from a severe attack of quinsy, which had set in six days previously.

Examination.—On the day of admission, examination showed the entire dorsum of the tongue to be covered by a thick, tough, grayish-white membrane, which was closely adherent. It was possible to remove only small particles, which left no raw surface. The entire surface of the soft palate, the pillars of the fauces, and the tonsils were covered with minute patches of grayish-white membrane easily removable and leaving no erosions. A very large peritonsillar abscess on the left, together with the swelling of the fauces on the right, shut off a view of the oropharynx.

Treatment.—The abscess was incised and evacuated, yielding over one-half ounce of pus not differing in gross appearance from that usually found in such cases.

Course of Disease.—February 7, the entire dorsum of the tongue had turned jet black, as if it had been stained. There was no more of the white membrane anywhere, and the black color was confined to the tongue. Vigorous curretting brought away very minute quantities of the black material. The patient had taken absolutely nothing that could produce such a stain. His general condition was much better than on the day previous, and on reopening the peri-tonsillar abscess only a very small quantity of pus was found. The black color remained on the tongue four days, disappearing gradually.

The general condition of the patient was such as is usually found in cases of quinsy, except that there was a marked suppression of urine.

Date.	Temperature.	Pulse.	Urine, oz.
February 6.....	102.8	86	1
February 7.....	98.6	72-70	2
February 8.....	97.6-99.2	60-84	3
February 9.....	97.2-97.8	64-74	2
February 10.....	97.2-98.2	64-68	8
February 11.....	97	60	not measured.
February 12.....	97	60	not measured.

It will be noted that the excretion of urine did not increase until the last day of the black growth on the tongue, when it had nearly disappeared. The urine, unfortunately, was lost, except on the tenth, when he passed eight ounces, and the results, which were as follows, showed nothing unusual: Reaction alkaline; sp. gr. 1012; color, amber; no albumin nor sugar. Was the suppression due to the black fungus?

Remarks.—A specimen of the black scrapings from the tongue was submitted to Dr. Stanley P. Black, who succeeded in making a culture on potato and reinoculating on bread crumbs, but it is questionable whether this mold is the one causing the black coloration of the tongue. The culture does not show any mold that approaches the black color found on the tongue.

What was the organism causing it?

Probably *Mucor nigra*, one of the zygomycetes. I have frequently seen dark growths of the aspergillus that invades the external auditory canal, but never anything so black as in the case reported.

A CASE OF ANEURISM OPERATED ON BY THE MATAS METHOD.

ISRAEL BROWN, M.D.
NORFOLK, VA.

Patient.—C. I., colored, aged 51, native of North Carolina.

History.—Family history was negative. Personal history showed usual diseases of childhood and gonorrhea 8 years ago. Formerly, patient was a heavy drinker and used tobacco in moderation for a number of years.

In January, 1906, he was taken with pain in right leg extending from knee to ankle, which was treated for some time as rheumatism. Pain was worse at night and unrelieved by posture or pressure. There was a pulsating tumor in the right popliteal space, supposed to have been caused by pressure and irritation produced by wearing high rubber boots. Patient was admitted to St. Vincent's Hospital, May 22, 1906.

Examination.—Heart, lungs, etc., were normal; there was very little hardening of the arteries. The tumor was hard, slightly elastic, and very painful. There was considerable edema of the leg.

Operation.—May 25, 1906, incision was made over tumor about 7 inches long, clots were turned out and interior sac was well cleansed. Groove between ends of artery, about one inch in length, were sutured with Lembert-sutures to preserve lumen of vessel; this layer was reinforced. Openings of other vessels were closed with catgut, tourniquet was loosened, and

* Read before the Eye, Ear, Nose and Throat Section of the Los Angeles County Medical Association, April 9, 1906.

where vessel leaked reinforcing sutures were used. The sac was obliterated as far as possible, it being rather large. Four deep sutures were then used to enfold sac from bottom and sides coming through skin and tied over pads to complete obliteration of sac. The skin was not turned in but sutured in the ordinary way with silk. There was no infection and the swelling very gradually disappeared.

CONGENITAL MALFORMATION OF HEART, WITH MALPOSITION OF CERTAIN VISCERA AND ABSENCE OF SPLEEN.*

G. W. POTTER, M.D.
REDFIELD, S. D.

The case in question was that of an infant which lived but four and one-half hours and was in the service of my colleague, Dr. H. C. Burch.

The mother, Mrs. A. J. O., was a primipara; pregnancy was normal and the child, a female, was born at full term, March 4, 1906. Labor was difficult, instrumental, but was not allowed to be overprolonged. The head was right occipital anterior.

The child at birth was feeble; there was difficulty in establishing respiration, and throughout the four and one-half hours of life the cry was weak and fretful. The attendant's attention was first attracted to the apex beat, which was situated three-fourths of an inch directly below the right nipple.

On the death of the child an autopsy was requested and granted. Our findings were as follows: An infant of nine and one-half pounds and perfectly normal on external examination. When we opened the thorax and abdomen an unexpected and interesting condition presented itself. The heart was placed in a corresponding position in the right side, which would have been normal in the left. It was one and three-quarter inches in length and one and one-quarter inches in diameter at the base. The external appearance was normal, but section showed the left heart defective in that the auricle was made up of a small thin sac about the size of a two-grain capsule. The left ventricle and entire right heart were normal. The pulmonary veins emptied into the left ventricle, there being no opening from the left auricle to or from any other part.

The right lung consisted of three lobes, the lower one being pressed upward by the position of the heart. The lung was normal in size and all portions were crepitant on pressure, showing that it functionated fully during this short life.

The left lung had no lobes and was greatly atrophied, being one inch in length, one-half inch in width in the widest diameter and one-fourth inch thick. A small area at the junction of the bronchi was slightly crepitant, all the other portions being non-crepitant, dark in color and bloody on section.

The left chest cavity was normal in size, and the space which should have been occupied by the heart and a normal lung was filled by the stomach, pancreas, small intestine and the greater part of the large intestine. These structures had apparently gained access to their unusual location by an opening caused by a complete absence of the left half of the diaphragm, excepting a narrow strip anteriorly three-eighths of an inch in width. All these parts were normal in size and appearance. The appendix, also misplaced, was two and three-fourths inches in length and about the diameter of a slate pencil.

Passing to the abdominal cavity, we found the liver and gall bladder normal in size, location and macroscopic appearance. The same was true of the urinary bladder, the uterus, tubes and ovaries. The colon, descending from the left chest cavity, passed diagonally across the abdominal cavity to the right side and reached the rectum to the right of the uterus and posteriorly to the right tube and ovary. Diligent and repeated search failed to reveal a spleen. The kidneys were both normal in appearance and size. They were both found to be floating; the right was resting on the pelvic brim and close to the colon as it descended on the right. The left was less freely movable.

In looking up the literature at hand on this subject I find that J. M. Van Cott, Jr., says that absence of entire organs is common, absence of lungs with absence of diaphragm occurs, and that cases of partial absence of one lung with compensatory hypertrophy of the other lung have been observed. Further, he noted absence of one or more chambers of the heart.

Dittel reported unilateral defect in the diaphragm of an infant that died soon after birth. The stomach, small intestines and part of the large omentum lay in the left pleural cavity. Instances in which the spleen has been found wanting are reported. More frequently the spleen is doubled.

There are several cases of complete transposition of the viscera on record. This was probably first observed by Riolanus[1] in 1650.

Absence of the heart, Gould says, has never been reported, except in monsters. The absence of one ventricle has been recorded. Jurgens, in Berlin, in 1882, reported an autopsy on a child who had lived some days after birth, in which the left ventricle of the heart was found to be completely absent. Many cases of displacement of the heart are reported.

I report this case in the hope that it will be as much interest to the members of the Association as it has been to me.

*Read before the Aberdeen (S. D.) Dist. Med. Soc., May 15, 1906.

A PECULIAR CONGENITAL MALFORMATION.*

F. RUSSELL DAME, M.D.
BEDFORD, MASS.

In July, 1905, I attended M. D. in confinement, the labor being in every respect normal. The woman gave birth to a healthy, robust boy, which gave a lusty cry before fully born and seemed to be normal in every way. I cut the cord and laid the child by while the mother was being attended to. In about fifteen minutes from the time of birth I found the child's respiration extremely slow and irregular; after waiting a few minutes I commenced to stimulate respiration, first by sprinkling with water and then by artificial respiration, but in spite of my efforts it shortly ceased to breathe.

At birth the child showed absolutely no malformation or abnormal condition; its first cry and respiration were strong and forceful, and having had a short labor I paid little attention to the child, thinking there could be nothing needed, and it seemed to do well for ten or fifteen minutes.

The case was so unusual that I obtained the parents' consent for an autopsy. On opening the chest cavity I discovered in the left pleural cavity a mass of coils of intestines, which had escaped from the abdomen through the small opening in the posterior portion of the diaphragm.

On further examination I found the stomach, duodenum and the small intestine, also the greater part of the large intestine, except the descending colon, and the rectum, and a small lobe of liver which was adhered to the stomach all above the diaphragm. The esophagus and the aorta passed through the diaphragm through a normal opening, and the esophagus wound up around through the diaphragm to the stomach. The appendix was between four and five inches in length. The liver was of about the normal size for a baby, but its right border posteriorly was curved inward and forward on itself. The left kidney was somewhat large and displaced downward, probably because of lack of other organs in the abdomen, which was practically empty. The left lung was very small and had not been distended; the right lung was distended. The heart was wholly to the right of the sternum. The pericardium was closely adherent to the diaphragm. The auricles of the heart were extremely large and thin-walled. The thymus gland was two and one-half inches long and thick. The mediastinal septum was only partially developed.

It was a question at the autopsy what caused the immediate death of the child, as it seemed that the abnormal position of the organs would not of itself terminate life in so short a time. My supposition was that the opening in the diaphragm did not allow sufficient suction in the chest to draw enough air through one lung properly to aërate the blood.

1. See Gould and Pyle on "Anomalies and Curiosities of Medicine," page 291, 1897 edition.

* By a curious coincidence these two unusual reports, one from Massachusetts and the other from South Dakota, were received by us on the same day.—EDITOR.

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[For other information see second page following reading matter.]

SATURDAY, AUGUST 4, 1906.

CANCER—CAN IT BE CURED?

Dr. Beard's hypothesis of cancer and the trypsin or pancreatic treatment of cancer, which he has evolved on the basis of this hypothesis, were discussed in these columns March 10, 1906. There we pointed out that Beard's hypothesis is a revival, in a modified form, of Cohnheim's familiar hypothesis of the embryonal matrix or residue, inasmuch as Beard asserts that cancer arises in aberrant germ cells, the actual continuity of which as cells from generation to generation, he believes, he has demonstrated in certain fishes. Commonly these cells degenerate, but not always, and cancer may result "from the attempt of an aberrant germ cell to continue its life cycle." Further, that in fishes these aberrant germ cells, which are held to be readily demonstrable, vanish as the activities of the pancreas commence; hence trypsin should cure cancer in man.

We are not aware that aberrant germ cells have been demonstrated in human embryos and, if so, that they here also disappear with the development of the pancreas. Be that as it may. At this time we are more concerned with the effects of the trypsin treatment, more particularly as set forth in a recent popular article[1] by one C. W. Saleeby, M.D., F.R.S. (Edin.), written, so it would seem, under the direct inspiration of its originator.

Says Saleeby: "The giving of the widest and most immediate publicity to these facts seems to be a proceeding from which it would be cruel and cowardly to refrain, even though absolutely dogmatic and final statements can not yet be made. . . . If the cases I have seen be not miraculous in the common sense of the term—that is to say, due to Divine interference with natural law—one has no choice but to speak." Now, what are "these facts:" (1) The apparent interference with the growth of inoculated cancer in two mice by injections of trypsin; in neither animal, however, are the experimental conditions as stated by Saleeby such as to warrant the conclusion that the trypsin cured the cancer completely. (2) "Apparently satisfactory" results from administration of trypsin in man to prevent recurrence of cancer after operative removal. (3) In a case of inoperable cancer in an outlying district in London, the growth being visible and full of vitality, the trypsin treatment, in about four weeks, resulted, "so far as all indications go," in the tumor being killed outright. "The patient is now apparently on the high road to recovery, though some difficulty has yet to be apprehended by reason of the poisonous action of the disintegration products of the growth." Saleeby adds: "So far as my small experience goes, this is certainly the most amazing thing I have ever seen." Furthermore: "Erroneous diagnosis, coincidence, miracle, spontaneous death of the tumors—none of these explanations is adequate in these any more than in the two mice of happy memory." In another case "the patient is apparently making a rapid recovery and it is expected that in a few weeks more no signs of the tumors will be discovered."

Comment seems hardly necessary, because there is no record here of any cure of cancer. The facts in regard to the cases are totally inadequate for an outsider to form any correct opinion of the actual state of affairs, and the manner in which the facts are given show that the reporter is not only highly inexperienced, but also deeply prejudiced. It is evident that this kind of exploitation of the trypsin treatment of cancer should cease. It is not at all creditable to its advocates. If there are facts available bearing on the true merits of this treatment let them be published fully so that their significance may be appreciated. Incomplete, premature, sensational announcements do harm only.

1. McClure's Magazine, August, 1906.

ACUTE EPIDEMIC POLIOMYELITIS.

That acute poliomyelitis, often associated with meningitic and encephalitic symptoms, sometimes occurs in epidemic form is illustrated by several distinct epidemics in this country. The most important is that reported by Caverly[1] from the vicinity of Rutland, Vt., of 119 cases, all occurring during the summer of 1894. Eighteen patients died; 85 of the patients were under 6 years of age. Smaller outbreaks have occurred in New York and in London, Ont. In Gloucester, Mass., 38 cases developed (Painter). So far as known few or no autopsies were made in cases in these outbreaks and no bacteriologic examinations of the central nervous system.

Probably the most extensive epidemic of acute poliomyelitis yet recognized is the Norwegian epidemic of 1905, an epidemic that seems to have begun in 1903 and probably to have reached its height in 1905, although the facts as to 1906 are not yet available. It may be mentioned, too, that in 1899 a distinct but localized epidemic occurred (Bratsberg epidemic). During 1905 a number of scattered outbreaks were observed in various parts of the country, more marked, however, in some parts than in others, and during the first nine months of the year 437 cases, with 67 deaths, were reported[2]—a relatively very large number when one considers the small total population of the country, about two and one-half

1. Medical Record, 1894, xlvi, 673.
2. Geirsvold: Norsk mag. f. Lägevidensk., 1905, lxvii.

millions, and the fact also that it is scattered over a large area. Naturally the disease is attracting much attention among Norwegian physicians, but a complete collective report giving the results of the clinical epidemiologic, bacteriologic and pathologic investigations that have been made and still are in progress has not yet appeared. From the various preliminary reports already published, it appears that this is an infectious disease with special predilection for the central nervous system and causing somewhat variable clinical symptoms, according to the particular part affected, the acute poliomyelitic type being, however, the predominating. The disease is evidently easily transmissible by more or less immediate contact, and there is also good reason to believe that it may be transferred by healthy persons, resembling in this respect acute cerebrospinal meningitis. In the majority of the cases, abortive as well as well-defined and typical, there is present angina with redness, swelling and increased secretion; rhinitis and conjunctivitis have not been noted. Consequently the point of entry may well be the throat.

The somewhat polymorphous clinical picture does not seem to have occasioned any doubt in the minds of the actual observers as to the etiologic entity of the disease to which may be applied with especial force Duclaux's noted saying in regard to many infectious diseases: "It is not the disease, but the microbe which is the specific." In 1901, Looft and Dethloff isolated from the cerebrospinal fluid of two cases of acute poliomyelitis a micrococcus that differs in certain points from the meningococcus of Weichselbaum and from the pneumococcus. From various cases in the present epidemic Geirsvold and others believe that they have obtained the same micrococcus which so far seems to occur almost exclusively in the cerebrospinal fluid, which, by the way, usually is clear or slightly opalescent. In one case it was turbid, due to the enormous number of bacteria present. After from 12 to 14 days the fluid is commonly sterile, although the cocci may be demonstrable in stained preparations. The coccus is described as a Gram-positive, bean-shaped diplococcus, the flat sides being parallel and separated by a narrow line; it grows quite readily on various media and has been found to be quite resistant. Geirsvold has observed similar organisms in the pharyngeal mucus of patients. He, however, does not at all set up the claim that this coccus, the exact relations of which to the types of meningococcus, to *Micrococcus catarrhalis*, and to possible other cocci have not been established definitely, is the cause of epidemic poliomyelitis, and especially because our knowledge of the bacteriology of the cerebrospinal fluid under normal and diseased conditions is as yet incomplete. However, the practically constant finding of Gram-positive, bean-shaped micrococci in the cerebrospinal fluid in these cases can not but be regarded as highly significant, especially since cultures of this organism give rise to paralyses in animals, and in all probability the work now being done will clear up this interesting question and at the same time other co-ordinate questions, e. g., the relation of acute poliomyelitis to meningitis and possibly also to other acute infectious or toxic processes in the nervous system.

In five cases from as many different foci of poliomyelitis Harbitz[3] reports the same general anatomic changes, namely, poliomyelitis with infiltrations in the spinal membranes, but also more or less well-marked changes in the medulla, central ganglia and brain—the process being apparently more diffuse than at first thought, the principal point of attack being the gray matter in the spinal cord. An unequal distribution of the lesions would go far to explain the so-called atypical cases (paralyses of cranial nerves, encephalitis, myelitis, etc.). Further anatomic studies on material from this epidemic, consequently, promise to help us to reach clearer conceptions of the acute infectious-toxic diseases of the central nervous system.

STATE PURE FOOD AND DRUG LEGISLATION NEEDED.

Congress has enacted two laws that are destined to do away with much of the fraud and deception connected with foods and medicines. The federal law regulating slaughtering and meat packing establishments, combined with the federal pure food law, will give a large measure of protection to the people in what they eat and drink. As regards the inspection of packing and slaughtering establishments, Secretary Wilson's first installment of the new regulations shows that this inspection will be systematic and thorough; the preliminary work already under way preparatory to putting in force the provisions of the pure food law next January shows the same thing. But—and this is the point to be considered in every state—these laws apply only to the District of Columbia, to the territories and to interstate and foreign commerce. Each state is left to regulate its own internal affairs. So while foreigners and residents of other states and territories have the assurance of protection against fraudulent, adulterated, unwholesome and misbranded meat products of the Chicago packing houses, the residents of Chicago and Illinois are left unprotected except as they may be protected by the laws of Illinois.

In like manner the public will be protected by the federal pure food and drug law against certain frauds originating outside of but not within their own state. For instance, as this law relates to "patent medicines," the Hartman people can still sell their Peruna in Ohio and humbug the temperance people there; in other states they will have to print on the label the amount of alcohol it contains, and this requirement will have a tendency, at least, to limit the number of preacher's testimonials. Kopp's Baby's Friend can still carry on its mission of killing babies and making money for its owner in Pennsylvania; in other states the morphin it contains

3. Forh. i det med. Selskab, 1905.

will make it unprofitable to push. Orangeine in Illinois, Antikamnia in Missouri and Bromo-Seltzer in Maryland can continue in their respective states, but elsewhere the vendors of these and similar preparations will have to tell the public that acetanilid is the principal ingredient. There is, therefore, nearly as much need for food and "patent medicine" legislation in those states that do not have it as there was before the passage of the pure food bill; in fact, state legislation is almost a necessity now.

This is recognized, and already preliminary work is being done in many states with the object of securing such legislation. The opposition will, of course, be very much lessened now that there is a federal law. Meanwhile it behooves physicians in every state to give the matter consideration.

It should be realized that the drug clause in the federal pure food law provides protection of the public only against preparations containing poisonous or habit-forming drugs; it does not reach those that, while possibly harmless, are useless—have no effect one way or another—such, for instance, as that typical fraud, liquozone. The legislation needed is that which shall enforce the principle, "Let the label tell." If the people prescribe for themselves, let them know what they are prescribing. Nothing short of this should be thought of.

In many states the druggists, recognizing that local legislation must now be had, are taking an active interest in the matter. There is no reason why physicians and pharmacists should not work together, and in some states they are doing so. In Illinois a committee appointed by the Illinois Pharmaceutical Association is cooperating with a similar committee of physicians, and a tentative bill is already prepared as a result of a conference of these committees. It is more to the interest of the pharmacist to co-operate with the physician in this matter than with the "patent medicine" men's association. But to get this co-operation physicians must take the lead.

THE TRANSMISSION OF ROCKY MOUNTAIN SPOTTED FEVER BY TICKS.

The Study of Rocky Mountain Spotted Fever has received a new impetus with Rickett's discovery that the disease is communicable to monkeys and guinea-pigs by means of inoculation of the blood of patients. In this number of THE JOURNAL Ricketts reports the probable transmission of the disease from one guinea-pig to another by means of a tick which inhabits infected districts. The work of Ricketts has been confirmed by Passed Assistant-Surgeon W. W. King of the Public Health and Marine-Hospital Service. Working along the same line, during the present season, Dr. King has also produced the disease in monkeys and guinea-pigs, and has succeeded in continuing the disease from one animal to another at the Hygienic Laboratory. In a preliminary note Dr. King also reports that he has succeeded in transferring the disease from one guinea-pig to another by means of a tick. This work was undertaken with the object of determining the correctness of Wilson and Chowning's theory of the mode of infection. Dr. King[1] placed one male and three female ticks (*Dermacenter occidentalis*) on a guinea-pig suffering with spotted fever. They remained until removed after the death of the animal, two and one-half days later. Nine days after the removal from the first guinea-pig, the female ticks were placed on a healthy guinea-pig which had never been exposed to spotted fever in any way. One tick was killed by the guinea-pig, but the other two remained until they dropped off after five days. Three days later the guinea-pig began to show symptoms, developing the same clinical picture as those animals inoculated with infectious blood. On the death of the tick-infected pig, another spotted fever in any way. One tick was killed by the blood, and this animal also sickened with the disease. While these experiments may possibly be explained on mechanical grounds, there is no doubt that the tick was the agent of transmission in this case, and it is strong presumptive evidence in favor of this mode of transmission in man. This extremely interesting and important work is the first positive experimental evidence in favor of the tick theory and should lead to further experiments to determine whether the infecting organism must undergo a cycle of development, as in the case with some organisms, notably the *Plasmodium malariæ*.

VICTIMS OF SANITATION.

It is alleged that the West Indian negroes employed on the Panama Canal do not thrive under the sanitary conditions introduced since the American occupation. It is said that they are dying off in large numbers, and this is attributed in the newspaper reports to the unaccustomed exposure due to the free ventilation of the apartments provided for them. It is the custom of the Jamaica negro to sleep in close, unventilated apartments to exclude the night air, and when these conditions are reversed he "catches cold," gets pneumonia and dies. This reasoning may be contested by sanitarians, but it has sufficient plausibility to be acceptable to the average newspaper reader. There is a possibility that the human animal may adapt itself to very insanitary conditions and find itself less resistant to other conditions of exposure when taken from its accustomed environment. The Arctic Esquimaux lives during the winter under conditions that are absolutely opposed to good sanitary principles. He cuts off all the ventilation possible from his igloos and keeps himself comfortable in a temperature largely maintained by his own animal heat. While tuberculosis is common among them, at least in Greenland, according to Nansen it is not at all rapidly fatal, but they quickly succumb when transported to more favorable climes and under the influences of civilization. To some it may appear that the alleged facts in regard to the cause of the high death rate among colored laborers in Panama is not credible, but it is not absolutely unreasonable to presume that an acquired immunity to certain insanitary conditions may exist, while at the same time there may be a special susceptibility

1. United States Public Health Reports, July 27, 1906.

to certain germ diseases from which they were, in a measure, protected by the insanitary conditions. The suggestion occurs whether some of the apparently increasing mortality from pneumonia in this country may not be due to the deprival of a similar protection under the more modern conditions of living, at least in certain classes of the population. The question will probably be answered in the negative, but it may be worthy of investigation if only for the sake of securing such an answer.

OVER-EATING BY THE POOR.

Much of the disease in the world is commonly attributed to errors in diet, both as regards quantity and quality. It is also usually supposed that the sufferings of poverty are largely connected with insufficient nutriment and much is said about the extravagance of the rich and the hunger of the poor as contributing to the miseries of this life. It is rather interesting, therefore, to hear from philanthropic workers, who may be supposed to know what they are talking about, that a large portion of the illness of poverty-stricken New Yorkers is due to over-eating. There is plenty of malnutrition and undoubtedly some actual starvation in the slums, but this testimony indicates that it is more exceptional than has been generally supposed. In this country we have never had anything like the famine conditions that exist in some parts of the world. We must consider, however, that the evil effects of over-eating referred to may not be due to the constant practice of gorging, but to the occasional excesses, and in this the very poor are as likely to indulge, when occasion offers, as any other class. Without condoning anything that the rich may do in this line, it is probably safe to say that the dietetic extravagances and eccentricities of even the very poor in many of our communities need correction. Most dispensary physicians could probably give some testimony on this point. In fact, the poor probably need instruction as to temperance in diet almost as much as to temperance in stimulants and their necessitated irregularities are only a part of the conditions in this regard which need reform.

TRYPANOSOMA DISEASE.

The recent death of an English Army surgeon from accidental inoculation with the germ of the African sleeping sickness has excited considerable interest, especially in connection with other instances demonstrating that Europeans are not immune to this widely extending African plague. Recent investigations by Dr. F. W. Mott,[1] of the pathologic laboratory of the London County asylums, throw considerable light on the subject of trypanosoma disease in general and are at least suggestive as regards the pathologic processes in that world-wide scourge, syphilis. He examined the microscopic changes in the nervous system of a horse dying from dourine or *mal de coit*, which is caused by a trypanosoma and has many resemblances to syphilis, which we are now coming to believe is due to the *Spirochæta pallida*. Comparative examinations of the tissues of the central nervous system in this disease and in sleeping sickness seem to show that the result of the infection is a chronic lymphadenitis, followed later by chronic interstitial inflammation in the lymphatic structures of the nervous system. In dourine the process starts at the point of primary infection, extends to the inguinal glands and thence, presumably by way of the pelvic lymphatics, passes by the lumbosacral nerves to the posterior spinal ganglia where it sets up intense inflammation resulting in destructive atrophy. The trophic sensory centers are involved, thus accounting for the cutaneous manifestations and a later degeneration of the posterior roots and sclerosis of the posterior columns, especially in the root zones. Other changes noted by Mott giving evidence of chronic irritation were subpial and septal proliferation of the glia tissue. The resemblance of these lesions to those of tabes is noted by him, and the study seems to throw at least a side illumination on the pathology of what have been called the parasyphilitic diseases of the central nervous system. There were reasons in this case to believe that the motor nerves were not affected in the same way as the posterior roots, and hence the theory of the disease as a polyneuritic infection is not supported by Mott's findings.

1. Nature, July 5, 1906.

ORIENTALISM.

No doubt there exist undescribed diseases and symptom-complexes, even apart from pathologic differentiations that must be made with increasing knowledge of etiology and of histologic alterations, as well as the extension of civilization to previously uninvestigated fields. It may be that certain morbid affections at present considered as clinical entities will be found in time to represent a group of diverse disorders. In illustration we need but cite the separation of typhus and typhoid and more recently that of typhoid and paratyphoid. A similar process of differentiation will have to be made with respect to the varied forms of polyarthritis, for one specific form of which alone the designation rheumatic should be reserved. Under the term orientalism, or a change to an Eastern appearance, Dr. H. Work Dodd[1] describes a small group of cases characterized by a number of symptoms in common. In all of the cases there was a history of syphilis, and this fact may be found to be of decisive significance. Some of the symptoms are indicative of involvement of the nervous system, while others are suggestive of an alteration in some elaborating structure or gland having an internal secretion, such as the testicle or the thyroid gland. Among the former are ptosis, external strabismus, general weakness, with impaired motility, slight atrophy of one-half of the tongue, with deflection to that side, deranged co-ordination, diminished painful tactile and thermal sensibility, general nervousness, mental depression, lessened sexual desire and power, drowsiness, enfeebled memory. The entire aspect was distinctly Tartar or Mongolian in type, the complexion sallow, the lips thick, everted, bluish, the nose fleshy and abnormally flexible, the hair deficient, the skin soft, thin, delicate, normally moist

1. Lancet, June 23, 1906, p. 1753.

and elastic. The nutrition was impaired and there was a marked stoop of the body. The knee-jerks were preserved and the pupils normal in size, though reacting sluggishly, and the fundus oculi presented no change. The thyroid gland could not be felt, and the testicles appeared atrophied. It can scarcely be said that the foregoing description is sufficiently distinctive to justify the belief that it portrays a new and definite clinical entity, but while we can not accept, neither can we reject, and further observation will be required before a final decision can be reached, especially in the direction of the underlying anatomic conditions.

Medical News

CALIFORNIA.

Personal.—Dr. Howard B. and Amelia L. Gates, San José, have gone to Europe.——Dr. Benjamin Shurtleff, Napa, on July 6, celebrated the fifty-seventh anniversary of his arrival in California.

Lane Lectures.—Dr. John C. McVail, Glasgow, Scotland, will deliver the annual course of Lane medical lectures at Cooper Medical College, August 20 to 25. The course will cover sanitation of cities and homes, the housing of people, sewerage, garbage and water supply.

San Francisco Healthy.—The president of the San Francisco Board of Health reports that the city is more free from contagious diseases than at any time in its history. The people seem to be healthier when living in tents and shanties than when living in houses. The simplicity and plainness of food necessitated by the change probably has something to do with these conditions.

June Vital Statistics.—During the month of June, 2,439 deaths and 817 births were reported. For the previous month 1,712 births and 2,375 deaths were reported. Tuberculosis was the chief cause of death, followed by diseases of the circulatory and nervous systems and by pneumonia. The most fatal epidemic diseases in June were, typhoid fever, measles, whooping cough, diphtheria and influenza.

Fined for Illegal Practice.—Thomas H. Storey, an osteopath of Los Angeles, charged by the State Board of Medical Examiners with practicing medicine without a license, was convicted and fined $500, Aug. 26, 1905, and appealed. On July 20, Judge Smith rendered a judgment confirming the decision of the lower court. Storey must, therefore, pay the fine of $500 or undergo imprisonment in the city jail for five hundred days.

Mandamus Granted.—The appellate court, on June 23, issued a writ of mandamus directed to the State Board of Medical Examiners, and its individual members, making it mandatory on the board to issue a medical license to James T. Arwine, Long Beach, or to show cause why the license should not be issued. Dr. Arwine claims to possess credentials, including a diploma from the Medical Department of the University of the South, Sewanee, Tenn., and states that in 1894 he was granted a license to practice in the District of Columbia, and in the following year in Indiana, and that he served as a surgeon in the army during and after the Spanish-American war.

COLORADO.

June Deaths.—During June 759 deaths were reported, which is equivalent to an annual death rate per 1,000 of 13.8. During the month there were 12 deaths from typhoid fever, 5 from diphtheria, and 4 from scarlet fever.

Communicable Diseases.—There were reported to the State Board of Health during the month of June, 108 cases of scarlet fever, 66 cases of smallpox, 63 cases of typhoid fever, and 36 cases of diphtheria, a decrease of 10 cases of scarlet fever and 4 cases of diphtheria, and an increase of 46 cases of smallpox and 24 cases of typhoid fever as compared with the previous month.

DISTRICT OF COLUMBIA.

Inspection of Potomac Water-Shed.—Dr. Joseph W. Goldberger, U. S. P. H. and M.-H. Service, is making a sanitary inspection of the Potomac water-shed to determine the prevalence of typhoid fever. This inspection is being made in connection with the board of officers appointed by Surgeon-General Wyman, which is now investigating the origin and prevalence of typhoid fever in the district. Previous reports have shown that the Potomac water was badly polluted and that its condition was a constant menace to the health of Washington. The question of prevention is especially complicated as the river and its tributaries receive water from five different states.

Report of the Health Department.—During the week ended July 21, 139 deaths were reported, 78 of the decedents being white and 61 colored. This is equivalent to an annual death rate of 22.1 per 1,000, and shows a slight decrease as compared with the corresponding week of 1905. Among the principal death causes were: Heart disease, 15; consumption, 11; typhoid fever, 6; malignant diseases, 6; and apoplexy, 5.

Typhoid Fever Increases.—Typhoid fever continues to show an increase, both in cases reported and in cases under treatment, as compared with the corresponding week of 1905, and with the previous week. The number of cases under treatment July 14, was 90, and on July 21 the number had increased to 124. During the week ended July 21, 50 new cases were reported.

FLORIDA.

Taken Ill En Route.—Dr. Charles S. Brown, Live Oak, who started for New York City, July 17, was taken ill in Jacksonville and forced to return to his home.

Colored Physicians Meet.—The State Medical Association of Colored Physicians held its meeting at Gainesville, July 17 and 18, at which the following officers were elected: President, Dr. Daniel W. Roberts, St. Augustine; Dr. Robert T. Ayer, Gainesville, vice-president; Dr. J. Harvey Smith, Gainesville, secretary; and Dr. Jacob A. Baker, Jacksonville, treasurer.

IDAHO.

Civil Service Examination.—July 25, a civil service examination was held in the federal building, Boise, to secure eligibles to fill vacancies as trained nurses in the Panama canal service.

Patients Build an Asylum.—The North Idaho Insane Hospital, Orofino, a three-story brick structure, has been built by the patients themselves, who lived in tents during the progress of the work.

Refused License.—Dr. E. L. Perrault, Boise, has filed a complaint against the Idaho State Board of Medical Examiners and has asked for a writ of mandamus, requiring the board to grant him a license to practice in the state.

Personal.—Dr. John C. Dwyer has been appointed health officer of Coeur d'Alene, vice Dr. W. W. Webb, resigned.—— Dr. C. W. Craik has returned from Walla Walla, Wash., to Coeur d'Alene, where he will conduct a hospital.

Hospital Notes.—The new hospital at Coeur d'Alene, under the charge of Drs. McGee and Craik, is completed and open to the public.——Dr. Ones F. Page, Sand Point, has assumed charge of the hospital at Cabinet.——A new hospital has recently been established by the physicians of Idaho Falls.

Societies.—The annual meeting of the Idaho State Medical Society will be held at Lewiston October 4 and 5. The preliminary program contains twenty-six papers.——The May meeting of the Northern Idaho Medical Society was held in Coeur d'Alent June 19. It was followed by a visit of half a day to St. Luke's Hospital, Spokane, Wash.——At the annual meeting of the Southern Idaho Medical Association, held in Twin Falls, the following officers were elected.——Dr. Erwin W. Kleinman, Shoshone, president; Dr. W. F. Pike, Twin Falls, vice-president; Dr. John M. Taylor, Boise, secretary; and Drs. George O. A. Kellogg, Nampa, and John W. Gue, Caldwell, trustees.

ILLINOIS.

Personal.—Dr. C. Fred Grimmer, Topeka, will soon leave for Vienna.——Dr. Charles True, Kankakee, is seriously ill with angina pectoris.

Phenomenal Kraus.—This medicine man, who has attained considerable notoriety, has had information filed against him in the county court by the Peoria Medical Association, charging him with being an itinerant drug vender and practicing medicine without a license.

Correction.—In THE JOURNAL of July 21, page 210, under Illinois news, it was stated in error that pneumonia caused "17.1 per cent. and consumption 1.8 per cent. of the total deaths during this period." The percentage of deaths from consumption should have been 11.8 and not 1.8.

Chicago.

Personal.—Dr. and Mrs. Arthur R. Elliott have gone to Europe to remain until October 1.——Dr. H. Edward Sauer, who was recently operated on for appendicitis, has recovered has resumed professional work.——Dr. Stephen W. Cox and family sailed from Montreal for Liverpool, August 4.

St. Luke's Hospital Acquires More Property.—St. Luke's Hospital added to its already large holdings on Michigan avenue by a purchase of twenty-five feet, with a depth of 161 feet, immediately south of the present holdings of the hospital, for $40,500, which represents a rate of $16.20 per front foot. This will form a part of the site of the new annex to the hospital.

Merger Completed.—The last formality in the merger of the Chicago Medical College and the Northwestern University was consummated July 24, when the Chicago Medical College, through its president, gave a quitclaim deed to the Northwestern University for all of its property. The intent of the conveyance is that there shall be a complete merger between the college and the university, free of all claims, limitations and obligations existing by virtue of any contracts heretofore entered into between the two institutions.

KANSAS.

Personal.—Drs. Allen and Willis C. Trowbridge, Clay Center, returned from Europe, July 20.

Hospital Talk.—At a recent meeting of the medical profession of Mitchell County the erection of a county hospital in Beloit was discussed. The hospital as proposed will cost about $20,000.

Gift for Hospital.—The family of the late Edward Thompson, Lawrence, Kan., has given $5,000 to the Lawrence Hospital and Training School for the assistance of those in need of surgical operations.

KENTUCKY.

Ill and Injured.—Dr. Joseph W. Renfrew, Sharpsburg, who has been seriously ill with appendicitis, is improving.——Dr. Charles Kearns, Sr., Covington, was seriously injured in a runaway accident July 13, in which he fractured a collarbone and three ribs.

Personal.—Dr. Walter F. Boggess has been appointed professor of medicine and clinical medicine in the Hospital College of Medicine, Louisville, vice Dr. T. Hunt Stucky, resigned.——Dr. A. David Willmoth, Louisville, has been elected a member of the Jefferson County Board of Health.——Dr. A. Harris Kelly, Louisville, coroner of Jefferson County, left for Europe, July 19.

Commencement.—The thirty-eighth annual commencement exercises of the Louisville College of Medicine were held July 14, when diplomas were conferred on a class of fifty-four by the Hon. L. Cooke, president of the board of trustees. The doctorate address was delivered by the Rev. Horace G. Ogden.——The fifty-seventh annual commencement exercises of the Kentucky School of Medicine, Louisville, were held July 12. Dr. William H. Wathen announced the honors, and the diplomas were conferred on a class of forty-eight by the Hon. John H. Leathers.

MARYLAND.

New Graduates Licensed.—The State Board has issued licenses to 77 applicants who passed the June examinations. Many were rejected.

Case of a Leper.—The authorities of Maryland are much exercised over the case of a leper, who came recently to the suburbs of Baltimore. He is an Assyrian suffering from tubercular leprosy and endeavoring to make his way to the leper colony in New York harbor. On reaching the borders of Pennsylvania he was turned back by the authorities of that state. At present he is isolated in a box car of the Baltimore and Ohio railroad and is being cared for by that company.

Baltimore.

New Building for Hospital.—Two four-story buildings will be added to the Johns Hopkins Hospital for the use of nurses of that institution. They are 40 by 78 feet, of brick and stone.

Convalescent Home Open.—St. Lukeland's Sanitarium, near Catonsville, opened for the season July 10. It is a charity institution and devoted to the care of the convalescent women from the city hospitals.

Typhoid Fever.—Typhoid fever has been discovered among the members of the new fourth class at the United States Naval Academy, Annapolis, and three are confined in the hospital, all of whom were taken ill while on board the practice ship *Severn*.

Secure Detention Hospital.—The mayor has appointed Drs. Edward N. Bush and Henry J. Berkley, and Mr. Henry Brown a commission to inquire into the most practical means of securing a detention hospital in Baltimore, where the supposedly insane may be examined before being committed to an insane hospital. At present, Baltimore is said to be the only large city in the country that has not such an establishment. At present the supposed insane patients are sent to the police station pending their trial and removal to the State Hospital.

Baltimore Personals.—Dr. Thomas L. Richardson has been appointed quarantine physician, vice Dr. Sidney O. Heiskell, deceased.——Dr. John F. Geraghty has been appointed assistant professor of genitourinary diseases at Johns Hopkins University.——Dr. Conrad K. Uhlig has been appointed lecturer in chemistry at the Women's Medical College.——Dr. William B. Wolf sailed for Bremen July 19.——Dr. W. Guy Townsend has been appointed health warden of the Twelfth ward, vice Dr. Thomas L. Richardson, appointed quarantine officer.——Dr. George J. Schonetzer has sailed for Europe.——Dr. L. McLane Tiffany is spending July and August at Gloucester, Mass.——Dr. Vernon F. Kelly has been appointed health warden of the Thirteenth ward to succeed the late Dr. Denard S. Williams.——Dr. Charles Bagley has been appointed superintendent of the Hebrew Hospital.——Drs. Martin J. Cromwell and Nathan Winslow have been appointed visiting physicians to Bay View Insane Asylum.——Dr. W. A. Parvis has gone to Denver on account of his health.——Dr. Lewis M. Allen has been appointed assistant surgeon in the Maryland Naval Brigade.——Dr. Thomas H. Brayshaw gave his annual dinner to the members of the Anne Arundel County Medical Society at his home in Glen Burnie, June 21.

MASSACHUSETTS.

Jury Disagrees.—In the case of the government against Dr. John Sinclair, Boston, charged with having performed an illegal operation, resulting in the death of Miss Annie M. Russell, the jury disagreed.

Fined for Illegal Practice.—J Herbert Neve, an optician of Boston, was prosecuted by the State Board of Registration of Medicine for practicing without registration and fined $100 in the municipal court, July 14.

Convicted for Malpractice.—Mrs. Eliza Bickford, East Boston, charged with performing a criminal operation resulting in the death of Miss Elizabeth Cosgrove, was sentenced July 14 to ten years' imprisonment in the Women's Prison, Sherborn.

Personal.—Dr. Thomas A. Storey has been appointed associate professor in charge of the department of physical instruction and training in the College of the City of New York.——Dr. Timothy J. Reardon has sailed for Bremen on the *Grosser Kurfuerst*.——S. N. D. North, Boston, director of the census, has been appointed to represent the Department of Commerce and Labor on the joint board authorized by act of Congress to formulate regulations for the enforcement of the pure food laws.

MICHIGAN.

Smallpox.—Victor, Clinton County, has reported two cases of smallpox and many of the villagers have been exposed.

Gifts to Hospital.—Edward Spanner, Lansing, has given an operating room and heating plant to the Women's Hospital and has in addition provided for the grading and beautifying of the grounds.

Unlicensed Practitioner Pleads Guilty.—Dr. Frank Calvert, Alpena, charged with practicing medicine without a license and without registration with the county clerk, pleaded guilty when brought before the justice, July 14, paid the costs and was released on the promise not to again offend.

June Deaths.—The total number of deaths reported for June was 2,650, an increase of 256 over June, 1905, but a decrease of 377 as compared with the previous month. This mortality is equivalent to a death rate of 12.5 per 1,000. Tuberculosis claimed 228 and accidents and violence 207 deaths.

Hospital Overcrowded.—The Upper Peninsula Hospital for the Insane, Newberry, is so overcrowded that the completion of the new cottage will not materially improve conditions. There are at present more than 700 patients in the institution, and many of these are occupying cots in corridors and otherwise being cared for in only a temporary manner.

Personal.—Dr. Joseph P. O'Dwyer, Detroit, is critically ill at his home in Detroit.——Dr. Isaac L. Polozker has returned after an extended trip to Europe.——Dr. and Mrs. Ernst A. Wittwer, Auburn, have returned from Europe.——Dr. John W. Foley, Ann Arbor, sailed for Antwerp, July 14.——Dr. David B. Downing has been appointed battalion adjutant of the First

Infantry, M. N. G.——Dr. Robert L. Kennedy, Detroit, has been elected medical superintendent of the Michigan State Sanatorium for Tuberculosis to be located at Howell.

Supreme Court Sustains Decision.—In the case of Kennedy versus the State Board of Registration in Medicine, in which the complainant, a practicing physician at Detroit, was notified to show cause why his certificate as a physician and surgeon should not be revoked, on account of his having inserted in the Detroit newspapers an advertisement containing material of an obscene and offensive nature derogatory to good morals, and in which the complainant instituted a suit complaining that the board was prejudiced and had prejudged his case, and prayed that the board be enjoined from revoking his certificate, the supreme court decided in favor of the defendant, and affirmed the decree dismissing the bill.

MINNESOTA.

Scarlet Fever Spreading.—Scarlet fever is reported to be spreading at Eveleth. There are sixteen cases, but so far no deaths have been reported.

State Board Officers Re-elected.—The State Board of Health has re-elected the following officers: President, Dr. Henry Hutchinson, St. Paul; vice-president, Dr. William H. Rowe, St. James, and secretary and executive officer, Dr. Henry M. Bracken, St. Paul.

Personal.—Dr. Mary E. Towers, Minneapolis, suffered severe contusions in a train wreck near Minot, N. D., July 15.——Dr. Ambrose Hammerel, St. Cloud, has been appointed physician to the state penitentiary, Stillwater, vice Dr. Winslow C. Chambers, resigned.——Dr. and Mrs. Alexander J. Stone have sailed for Japan and China.

MISSOURI.

Personal.—Dr. Robert Luedeking, dean of the Medical Department of Washington University, St. Louis, sailed for Europe July 31.——Dr. Willard Bartlett, St. Louis, is making a good recovery from his recent operation for appendicitis.

Annual Report of Library.—The seventh annual report of the St. Louis Medical Library shows that during the fiscal year 3,315 volumes were added, making the total number of volumes 8,647. An important addition will soon be made, the St. Louis Mercantile Library having agreed to transfer all its medical books, numbering 1,700, to the Medical Library. Considering the rapid growth of the library it seems necessary to add another room for the shelving of books. The library is in prosperous condition and its usefulness is rapidly increasing. At present 137 medical journals are received, of which 42 are foreign.

Proceedings Against Illegal Advertisers and Quacks.—The prosecutions instituted against obscene advertising and illegal practitioners have resulted as follows:

1. For alleged indecent and obscene advertising contrary to the municipal ordinances:
(a) *As against the Physicians:* City of St. Louis vs. Nathaniel K. King; Dec. 1, 1905. Judgment for plaintiff and defendant fined $50.00 and costs. Appeal taken to Court of Criminal Corrections, judgment for plaintiff and defendant fined $50.00 and costs. Appeal taken to Supreme Court of State of Missouri.
(b) *As against the Newspaper:* City of St. Louis vs. St. Louis *World* Publishing Company; March 9, 1906. Judgment for plaintiff and defendant fined $50.00 and costs. Appeal taken to the Court of Criminal Correction, where the matter is now pending.
2. Midwives advertising as physicians: April, 1906. Pauline Kahm pleads guilty, fined $10.00 and costs. May 29, 1906; Rosalie Holler found guilty, fined $25.00 and costs. June 2, 1906; Mary Arthurs pleads guilty, fined $40.00 and costs. July 11, 1906; Mary Murphy found guilty, fined $25.00 and costs.
3. For alleged criminal abortions: May 26, 1906; Dr. E. J. Hogan found guilty. Fined $250 and sentenced to six months in the workhouse. Appeal taken.

NEBRASKA.

Medical Journal for Omaha.—It is reported that a medical journal, supported by the Douglas County Medical Association, will be established in the near future.

Hospital Notes.—The new Wise Memorial Hospital, Omaha, now under construction, is expected to be ready to receive patients in November.——Drs. James R. Kalar and Sara B. Kalar have opened a hospital in Bloomfield.

Can Not Practice in the State.—Dr. David G. Walker, Newman Grove, and Eric Munk, Lindsay, whose certificates were revoked several months ago by the State Board of Health, will not be allowed to practice medicine in Nebraska. The decision of the state board has been sustained by the decision of Judge Frost, of the circuit court.——The license to practice medicine of Dr. J. T. Matthews, Omaha, accused of having performed a criminal operation, was formally revoked July 18.

Personal.—Dr. H. L. Wells, Westpoint, has been appointed coroner of Cuming County, vice Dr. E. H. Morgan, Bancroft, resigned.——Dr. James R. Kalar, Bloomfield, has been appointed local surgeon for the Chicago, St. Paul, Minneapolis & Omaha Railway.——Dr. Gustav Hahn, Omaha, has gone to Europe.——Dr. Ernest A. Creighton, Red Cloud, has been appointed local surgeon of the Burlington System.——Dr. and Mrs. Claude W. Mason, Omaha, left for their new home in Laos, Siam, August 1.

Asylum Affairs.—The governor has requested the resignation of Dr. J. M. Alden, superintendent, and Dr. Frank S. Nicholson, assistant superintendent, of the Hospital for the Insane, Norfolk. Both refused to resign while they were under charges. It is reported that the governor's nominees for these positions are Dr. G. A. Young, Asylum, for superintendent and Dr. H. Douglas Singer, Omaha, for assistant superintendent. On July 12 the governor appeared at the asylum with his appointees and demanded that the superintendent and his assistant turn over the keys of the institution and the state property. This they refused to do, and the matter will probably be carried to the courts.——Dr. Lawrence B. Pilsbury, Lincoln, has been appointed pathologist at the Nebraska Hospital for the Insane, Lincoln.——Dr. John G. Hay, assistant superintendent of the Nebraska Hospital for the Insane, Lincoln, has been appointed superintendent, vice Dr. James L. Greene, resigned.

NEW HAMPSHIRE.

Personal.—At a summer meeting of the Grafton County Medical Society, held at Woodsville recently, a feature of the occasion was the banquet tendered by the members of the society to Dr. William Thayer Smith, dean of the Dartmouth Medical School, Hanover.——Dr. A. S. Wallace, Rochester, recently had a severe cerebral hemorrhage.

Pure Food.—The *Sanitary Bulletin* for July devoted the greater part of its issue to the reports of the food inspection for the quarter ended June 30. The articles inspected included canned meats, catsups and table sauces, canned vegetables and fruits, lemon extract, jellies and preserves, maple syrup and sugar and dried fruits, molasses and relishes, prepared mustard, spices, vinegar, coffee and cocoa. The board reported that adulterated glucose entered into the composition of practically all the cheap candy on sale.

NEW JERSEY.

Physician Acquitted.—Dr. George H. Fletcher, Atlantic City, charged with causing the death of a colored girl by an alleged illegal operation, was acquitted June 7.

Osteopath Acquitted.—Jose C. Howell, an osteopath of Vineland, who has been on trial in the Cumberland County court, charged with the illegal practice of medicine, has been acquitted.

Home for Incurables.—Articles of corporation have been filed for a Home and Hospital for Incurables at Newark. The object of the institution is to care for women suffering from incurable diseases.

Westfield Physicians Organize.—The physicians of Westfield have organized a society with the following officers: Dr. Joseph B. Harrison, president; Dr. Frederick H. Kinch, vice-president, and Dr. George S. Laird, secretary and treasurer.

Eye and Ear Department Created.—It has been announced that a department of ophthalmology and otology will be opened at St. Elizabeth's Hospital, Elizabeth, with Dr. Norton L. Wilson in charge and Dr. Charles H. Schlichter as assistant.

Medical Men Convicted.—Myrschynt Guinness, colored, president of the Hindoo Pain Destroyer Medicine Company, and Frederick Fletcher, colored, a director of the same, were convicted by a jury in the court of sessions, June 26, on charge of obtaining $300 under false pretenses from Mary E. Brown, of Seabright, who was induced, on representations of the defendants, to invest money in the company.

Personal.—Dr. Frank N. Robinson, Camden, who has been spending several months in California, has returned home.——Dr. John P. Reilly has been appointed chief of the staff of St. Elizabeth's Hospital, Elizabeth, N. J., and Dr. Edward J. Ill, Newark, consulting surgeon. Drs. Frederick H. Pearson and Otto Wagner have been added to the list of visiting physicians and Dr. Milton A. Shangle has been made assistant surgeon.

NEW MEXICO.

Personal.—Dr. Z. T. Martin, formerly of State Hospital for the Insane, No. 1, Fulton, Mo., has located in Roswell.——Dr. Francis T. B. Fest, Las Vegas, has established and equipped a laboratory at his office in that city.

Hospitals Open.—St. Mary's Hospital, Roswell, was thrown open to the public June 10. The main building of the hospital is complete, but wings and a special department for tubercular patients are to be added in the near future.——The new hospital of the El Paso & Southwestern Railroad, Dawson, to provide for the sick and injured of the company's employés north of El Paso, has been completed at a cost of $15,000. It provides accommodation for twenty-five patients.

NEW YORK.

New York City.

Sanitarium Dedicated.—The new building of the Sanitarium for Hebrew Children at Rockaway Park was dedicated July 22. It has accommodation for 400.

Personals.—Dr. and Mrs. William Morris Butler sailed for Genoa on the *Princess Irene*, July 28.——Dr. Emile J. Sarlabous sailed on the *Vaderland*, for Dover, July 28.

Ambulance Wrecked.—An ambulance belonging to the J. Hood Wright Hospital was wrecked, July 25, by a collision with an Eighth Avenue car and the surgeon, Dr. Leo Halpin, sustained a scalp wound and was badly bruised.

Floating Hospital Needs.—The Floating Hospital of St. John's Guild has been carrying a thousand mothers and children daily, there being a larger number than usual of very sick babies. In order to ensure the continuance of the work for the remainder of the summer, funds are urgently needed.

Death Rate Decreases.—New York seems to be enjoying a healthy summer. For the two weeks ended July 21, there were only 3,175 deaths occurred as against 3,860 for the corresponding week of last year. The death rate from the beginning of June shows a falling off from last year. This is due largely to a decreased infant mortality.

Will Enlarge Hospital.—Plans have been filed for the further enlargement of Roosevelt Hospital. The two-story amphitheater will be made into a four-story building providing a large lecture hall and dormitories for hospital employés. The proposed improvements will cost $12,000. A new amphitheater is now being erected on another portion of the grounds.

For Sick Tenement Babies.—The Children's Aid Society, through the Sick Children's Mission, has undertaken a timely service for sick tenement children by assigning physicians to the poorest quarters of the city, ready to respond to all applications for medical attendance made at the Sick Children's Mission, and druggists at convenient points have agreed to fill prescriptions at first cost to the mission.

Contagious Diseases.—There were reported to the sanitary bureau for the week ended July 21, 393 cases of tuberculosis, with 182 deaths; 268 cases of measles, with 8 deaths; 206 cases of diphtheria, with 28 deaths; 72 cases of scarlet fever, with 6 deaths; 60 cases of typhoid fever, with 17 deaths; 59 cases of whooping cough, with 7 deaths; 3 cases of cerebrospinal meningitis, with 12 deaths; and 29 cases of varicella; a total of 1,000 cases, with 260 deaths.

Garbage Should be Burned.—The recent burning of the garbage reduction plant on Barron Island and the subsequent noxious condition of the Jersey coast due to dumping garbage at sea, have led to a renewed agitation of the subject of garbage disposal in this city. Dr. Alvah H. Doty, health officer of the port, after having made an exhaustive study of this subject in this country and in Europe, believes that the only perfect satisfactory method of disposal is incineration. He is opposed to the present method of collecting and transporting refuse, which takes so much time that it results in disseminating germs and leaving a trail of noxious odors and disease in its wake. He thinks there should be an incineration plant in each section of the city, and that an educational crusade should be started having in ultimate view the private incineration of refuse, as this is really the only way to do away with this menace to public health.

NORTH DAKOTA.

Personal.—Dr. Henry H. Ruger, Devil's Lake, is critically ill with cerebral hemorrhage.——Dr. August S. Eggers, Grand Forks, left for Norway, July 8.

Convicted of Illegal Practice.—F. M. Van Snyders, manager of a so-called sanatorium in Fargo, was convicted, June 13, for practicing medicine without a state license and was fined $50.

Hospital Notes.—Rugby has agreed to donate $8,000 toward the new Lutheran hospital to be located in that city.——It is practically sure that Grand Forks will have a new hospital, to be conducted by the St. Joseph sisterhood, as $14,500 of the $15,000 required to be pledged has been donated. A site for the hospital has been selected in Riverside Park.——St. John's Hospital, Fargo, has decided to erect a home for nurses in connection with the institution.——Dr. Rolly R. Hogue, Linton, has established a private hospital to accommodate fifteen patients at that place.——The secretary of the Sheyenne Kreds Hospital Association has invited bids for the erection of a hospital at Rugby.

OHIO.

Fire Loss.—In a fire which destroyed the greater part of Peebles, Dr. George F. Thomas lost his residence, valued at $3,000.

Addition to Hospital.—On June 16 ground was broken for the new addition for the Mount Carmel Hospital, Columbus, by the bishop of the diocese. In the addition a new operating room and many rooms for private patients will be included.

Guilty of Abandonment.—At a second trial, July 7, Dr. Henry P. Feaster, Delaware, was found guilty of abandoning a child on the morning of May 18, and was sentenced to imprisonment for three months in the workhouse and to pay a fine of $150 and costs.

State Board Appointments.—Dr. Joseph M. Stephenson, Chillicothe, has been appointed a member of the Ohio State Board of Medical Registration and Examination, to succeed Dr. John K. Scudder, Cincinnati, and Dr. James A. Duncan, Toledo, has been made a member of the board to succeed Dr. Samuel B. McGavran, Cadiz.

Object to Publicity.—At a meeting of the Lorain County Medical Society, held in Elyria, July 10, a resolution was adopted that the society condemn the practice of physicians connecting their names with cases for publication and that a committee of three be appointed to wait on the newspapers of the county and request their co-operation in this matter.

Ill and Injured.—Dr. John W. Birk, Bucyrus, sustained a fracture of the right leg, July 15, while cranking his automobile.——Dr. William G. List, Cincinnati, demonstrator of anatomy at the Medical College of Ohio, was seized with cerebral hemorrhage July 7 and is critically ill.——Dr. Fred C. Lamar, Wilmington, underwent operation for appendicitis at Louisville recently and is making favorable progress toward recovery.

Milk Inspection.—Drs. Otto P. Geier, Alfred Friedlander, and H. A. Woodward have been appointed a committee of milk inspection by the Cincinnati Medical Society. The committee had asked for the appointment of Dr. J. Henry Schroeder as chemist and Dr. Casper F. Hegner as bacteriologist.——William Thorn, a dairyman of Toledo, pleaded guilty July 16 to the charge of selling adulterated milk and was given the minimum fine of $50 and costs.

Convicted for Illegal Practice.—Mrs. Lydia A. Marshall, a "pow-wow" doctor of Canton, was convicted on July 21 and fined $25 and costs on the charge of practicing medicine without a license.——"Phenomenal" Kraus, who had been practicing medicine without a license in Lorain County, was tried at Elyria, found guilty and sentenced to pay a fine of $100 and costs, amounting to $26.60. The fine was paid.——A. F. Brennell, Massillon, was convicted of the unlawful practice of medicine, June 22.——William Bradley, Toledo, 86 years of age, pleaded guilty, July 10, to the practice of medicine without a license and fined $25.00 and costs. Fine was suspended on defendant's promise to cease practicing.

Medical Officers of the National Guard.—Dr. Clarence E. Berkley and Louis E. Cook, Cincinnati, for assignment to the First Infantry; Dr. Louis L. Syman, Springfield, for the Third Infantry; Dr. Robert T. Lawless, Toledo, for the Sixth Infantry; Dr. Flint Cline, Ironton, for the Seventh Infantry; Dr. Lloyd L. Jones, Columbus, for the Ninth Infantry; Drs. John T. Murphy and Albert E. Stage, Columbus, for the Second Signal Corps and Dr. Louis Robechek, Cleveland, candidate officers for the medical department of the Ohio National Guard, were examined July 12 and were all recommended for commissions as first lieutenants and assistant surgeons.——Maj. Frank W. Hendley, Cincinnati, surgeon, assigned to First Infantry, O. N. G., has resigned and Captain and Assistant Surgeon Joseph A. Hall, has been promoted to fill the vacancy.

Personal.—Dr. William E. Keiley has been elected president, Dr. E. Gustav Zinke vice-president and Julius H. Eichberg secretary of the board of directors of the Cincinnati Hospital.——Josiah Hartzell, Ph.D., Canton, has been elected president and Dr. Darwin G. Farmer, Geneva, vice-president of the State Board of Health.——Dr. George M. Waters, dean and professor of medicine in the Ohio Medical University for several years,

sailed from New York on the *New Amsterdam* for Rotterdam, July 4.——Dr. Walter W. Mannhardt, McClure, has been appointed coroner of Henry County, vice Dr. Granville M. Wright, Liberty Center, resigned.——Dr. J. O. Glass, Springfield, sailed for Europe, June 29.——Dr. E. M. Craig has been made instructor in osteology and demonstrator of anatomy in the Miami Medical College, Cincinnati.——Dr. Otto Juettner, Cincinnati, has been made a member of the Anthropological Institute of Great Britain and Ireland.——Dr. and Mrs. Thompson R. Terwilliger, Lima, sailed for Europe, July 15.——Dr. Gustav A. Hermann has resigned from the Hamilton board of health.——Dr. David N. Kinsman, who has been chief of the staff of the Protestant Hospital, Columbus, since its organization, resigned, but will remain with the institution as specialist on nervous diseases. Dr. Will J. Means has been selected to succeed Dr. Kinsman as chief of staff.——Dr. Henry Krone, Jr., Hamilton, has been elected district physician, vice Dr. George M. Cummins, resigned.

PENNSYLVANIA.

State Laboratories' Home.—It is stated that the bacteriologic and chemical laboratories of the State Health Department will be established in the medical laboratories of the Medical Department of the University of Pennsylvania, Philadelphia. It was not possible to secure suitable buildings in Harrisburg and the authorities of the university offered the department the use of the laboratories.

Soldiers' Milk Adulterated.—From investigations carried on by the State Food and Dairy Commissioner relative to the milk supplied the Pennsylvania National Guard in camp at Gettysburg, it was learned that the milk was, to a large degree contaminated with preservative agents. Of the nineteen samples of the milk collected from the different regiments seven were found to contain formaldehyd.

Philadelphia.

Meat Crusade.—The crusade against the insanitary meat dealers in the city continues, and during the past week five additional slaughter houses were ordered closed by the Board of Health. Two meat dealers who failed to comply with the orders issued by the Health Bureau were arrested and held in $600 bail for court.

Health Report.—The total number of deaths reported for the week reached 557. This is an increase of 29 over the number reported last week, and an increase of 80 over the number reported in the corresponding week of last year. The principal causes of death were: Typhoid fever, 13; measles, 4; pertussis, 9; diphtheria, 7; consumption, 56; cancer, 18; apoplexy, 18; heart disease, 39; acute respiratory diseases, 36; enteritis, 118; Bright's disease, 32; suicide, 3; accidents, 18; and marasmus, 13. There were 170 cases of contagious disease reported, with 22 deaths, as compared with 191 cases and 12 deaths reported in the previous week.

Personal.—Dr. Henry D. Heller, quarantine physician to the port of Philadelphia, was thrown from his carriage in Hellertown, Pa., July 27, and painfully injured.——Dr. Walter M. Ziegler returned July 22 from a tour of Europe.——Dr. R. Oliver Kevin has returned from a European trip.——Dr. and Mrs. Ernest Laplace and Dr. and Mrs. J. L. Borsch have gone to Paris. The French Foreign Office announces that the Cross of the Legion of Honor has been bestowed on Dr. Laplace.——Dr. Edward O'Donnell, resident physician at St. Mary's Hospital, was painfully injured July 23, by being thrown from a hospital ambulance.——Dr. Samuel W. Morton, who was operated on for appendicitis in the German Hospital, is improving.——Dr. Aaron Brav was painfully injured in an automobile accident July 24.——Dr. William M. Angney, police surgeon, who was operated on for intestinal trouble, is gradually recovering.

Medical Inspection of Schools.—The report of the medical inspection of pupils of the public schools during the year ended June 30, shows that during that period the inspectors made 54,344 visits to 2,316 schools, and examined 90,569 children. Of this number 8,722 were excluded from school until they had recovered, thus eliminating a possible source of contagion in the school room. In addition, there were 123,021 children examined for defective vision, hearing or other ailments which retard progress in study. Of this number 33,283 were found to be in need of medical attention. To the parents of these, letters were sent recommending that the children be placed at once under the care of a physician, and giving the reasons for such recommendation. The report commends the presence of trained nurses in the schools and claims that much advantage is derived from their services. During the present year a nurse detailed with the approval of the authorities by the Visiting Nurses' Society, served in seven of the city's schools. These schools had a total of 8,037 pupils. During the year 1,525 children suffering from minor skin troubles, parasitic diseases of the skin and scalp, insignificant diseases of eyes or ears, bruises, cuts, etc., were treated by the nurses at the schools under the doctor's directions; 526 children were cared for by the nurse at their homes, where otherwise they would have received no attention, and 139 children were taken by her to the dispensaries, making a total of 2,193 cases in the seven schools.

CALIFORNIA RELIEF FUND.

The following contributions are acknowledged:

INDIVIDUAL CONTRIBUTION.

Black, E. M., Yancy, Ark.	$1.00

SOCIETY CONTRIBUTIONS.

Stark County Medical Society (Ohio)	$312.19
Scott-Carver County Medical Society (Minn.)	5.00

Rhode Island Medical Society ($209.75, less $9.75 expended for postage and printing) $200.00:

The Society	$100.00	H. C. P.	$ 7.25
Abbott, H. P.	5.00	H. R. B.	20.50
Ballou, C. O.	25.00	O'Leary, C. D.	1.00
Best, O. F.	5.00	Porter, A. J.	5.00
Broad Street physician.	1.00	Roswell, J. T.	1.00
Canfield, W. C.	1.00	Rothwell, W. P.	5.00
Chesboro, E. D.	10.00	Shea, E. F.	1.00
E. G. R.	10.00	Siegal, O. B.	2.00
Fletcher, William	5.00	Stone, Ellen M.	3.00
Hammond, Roland	2.00		

Total	$ 518.19
Previously acknowledged	13,130.00
Grand total	$13,648.19

GENERAL.

Missouri Valley Society Fall Meeting.—The nineteenth annual meeting of the Missouri Valley Medical Society will be held in Council Bluffs, Iowa, September 6 and 7. The program will be limited to twenty-five papers, and the titles must be received by the secretary, Dr. Charles Wood Fassett, St. Joseph, Mo., by August 10, in order to secure a place.

Ohio Valley Meeting.—The eighth annual meeting of the Ohio Valley Medical Association will be held in Louisville, Ky., Nov. 14 and 15, 1906. An interesting program is being arranged. The society has shown a healthy growth since its organization, and the next meeting is expected to surpass any previous one in point of attendance. Dr. J. Clarence Webster will deliver the public address before the association. Dr. J. Garland Sherrell, Louisville, is chairman of the committee of arrangements.

Health Report of the Isthmus for June.—In his report for June, Dr. Gorgas calls attention to the fact that no new cases of yellow fever have occurred since the four reported in May, and states that this should give great confidence in their ability to handle yellow fever should it again develop. Pneumonia still causes the greatest number of deaths. The death rate among the negroes continues larger than among the whites. During the month there was not a single death among the American employés. The death rate among the white employés, Dr. Gorgas states, shows a steady improvement, being smaller in June than ever before, though June is one of the least healthy months on the Isthmus.

FOREIGN.

Institute of Tropical Medicine for Ceylon.—The Ceylon government, recognizing the importance of the study of tropical diseases, has established a pathologic laboratory in Colombo under the direction of Dr. Castellani. A special hospital has also been established in the immediate neighborhood of the laboratory. The hospital contains eighteen beds, and it is expected that it will shortly be enlarged and a ward for Europeans added.

LONDON LETTER.

(*From Our Regular Correspondent.*)

London, July 14, 1906.

Novel Method of Libeling a Physician.

At the instance of the Medical Defense Union two women, mother and daughter, have been prosecuted for giving false information which constituted a libel on a physician, at Kingston, when registering the birth and subsequently the death of an illegitimate child of the younger woman. A well-known physician in the neighborhood is Mr. Albert Max Sully, and the child was described as Arthur Albert Max Sully, and the mother described herself as Alice Sully, formerly Wray.

in her defense the woman said that she had not accused Mr. Sully of being the child's father, but that the father was a person named Sully, whose whereabouts she did not know. Mr. Sully gave evidence that in 1902 he had refused to attend her any more and that since then he had never spoken to her. He had in that year obtained a signed statement from the women retracting statements that they had made concerning him in the neighborhood. In fining them £10 each, with the alternative of twenty-one days' imprisonment, the chairman of the bench of magistrates spoke of the satisfaction of the magistrates that Mr. Sully had had an opportunity of clearing his character.

The Report of the Metropolitan Asylums Board.

The annual report of the Metropolitan Asylums Board of London, which has just been issued, is very satisfactory. The area served by the board is 121 square miles and the population, estimated in the middle of 1905 468,794. The board possesses 17 infectious hospitals, 5 asylums for imbeciles, a training ship, 15 schools or homes for certain diseases of children, and 8 land ambulances, besides a service of ambulance steamboats. During the year, 27,162 patients were cared for in the fever hospitals and 72 in the smallpox hospitals. The decline in the mortality of the diphtheria cases continues. In 1893, the year before the disease was treated with antitoxin, the death rate was 30.4 per cent. Since the introduction of the treatment the rate has rapidly declined.

Lodging House Keepers and Infectious Diseases.

A woman musician, who brought a claim against a Scarborough lodging house keeper to recover her luggage, which had been detained, was met by an unreasonable counter claim. The plaintiff took rooms for the time she was engaged at a local place of entertainment. Three days afterwards she found that there was measles in the house and left at once, but the landlady refused to give up her luggage and entered a counter claim for payment for the lodgings in lieu of notice. The judge made short work of the case, pointing out that a common misfortune had put an end to the contract.

The Disinfection of Ships.

An important report on this subject has been made to the local government board by Dr. John Wade. When plague, cholera, or yellow fever has broken out on a vessel destruction is required not only of bacteria, but in the case of plague, of rats and their fleas; and in the case of yellow fever, of mosquitoes. Dr. Wade finds that sulphur dioxid is preferable to carbon monoxid or to formaldehyd. Carbon monoxid destroys rats, but fails to destroy mosquitoes and bacteria. Formaldehyd destroys bacteria, but spares rats and mosquitoes. Moreover, formaldehyd has no penetrative power, and for its complete removal the disinfected material must be chemically treated. To determine the most effective method of applying sulphur dioxid a model ship's hold of a capacity of 1,350 cubic feet, or 34 tons, was constructed and filled with a cargo representing an ordinary mixed load from an Indian port—jute, maize, barley, etc. This cargo was packed with great care, avoiding interstitial spaces so as to make the test of penetration as severe as possible. Cages containing rats were placed at the middle and at the top and bottom of the cargo, and flexible metal tubes were distributed throughout and connected to a small laboratory erected on the outside of the hold, so that samples of air could be drawn off from each part of the interior and analyzed. Three methods of generating sulphur dioxid were used and the degree of penetration was determined by analysis of the air in different parts of the hold and by the action on rats and on non-spore-bearing bacteria placed in the center of the cargo. It was found that rats and insects were destroyed in less than two hours by the uniform diffusion of at most 0.5 per cent. of sulphur dioxid. This condition is easily and quickly reached in cabins and empty holds and in the space round the cargo in a loaded hold, but owing to the extensive absorption of the gas, air containing 3 per cent. of it must be circulated around the cargo for from 8 to 12 hours to ensure adequate penetration. Dr. Wade concludes that pathogenic bacteria would be destroyed by this treatment, and that if the hold be closed for a like period afterward, sufficient penetration will take place to ensure disinfection of the interior of the cargo, in which such bacteria are likely to be present. In extreme cases, complete penetration can be secured by repeating the fumigation without opening the hatches. The damage done to the cargo consisted in the destruction of moist foods, such as meat, fruit and vegetables. Wheat in bags was rendered useless for bread-making, but owing to slowness of penetration wheat in bulk was not seriously affected, and barley and maize were practically unaffected. Textile fabrics, metals, and furniture were not affected by the sulphur dioxid, but were liable to injury by the accompanying sulphuric acid.

VIENNA LETTER.

(From Our Regular Correspondent.)

VIENNA, July 17, 1906.

Advertising by Medical Practitioners.

A joint action by all medical councils of the empire has been instituted in order to clear the attitude of the medical world toward the question of advertising. As a rule, the physician is not allowed to advertise in this country, and the medical views held here on this subject are as strict as anywhere else. The councils are entitled to fine any one trespassing these regulations for a sum not exceeding $40, but they have not the power in every case to obtain the money, if the offenders choose not to pay, as the law is not always on their side. Moreover, lately, the competition of nature healers and other quacks has grown so keen, especially on the frontier against Germany, that the question had to be reconsidered. Thus the medical councils of Saalsburg and the Tyrol have permitted such of their members as reside on the frontier to use decent advertisements in certain journals. Furthermore, every doctor settling down afresh is allowed to inform the public of this fact, by inserting a simple notice of his name, qualification (specialist) and address three consecutive times in the papers. This new departure is meant as an auxiliary means in the struggle which scientific medical education has to fight out against unscrupulous attacks from quacks, who try to impress the public with their knowledge. As the law against illegal practice is handled in a very lenient manner, self-protection must be the aim of the profession.

The New Pharmacopeia.

The new edition of the Austrian Pharmacopeia, which would be the eighth, was to be published in July, but by an order of the ministry of the interior, the publication was postponed until next year, because a number of modern remedies had been rejected by the committee appointed for the edition. Now it is not practicable to omit such acknowledged and useful substances as adrenalin or thyroidin because they are partly new, partly definite preparations supplied by factories. The present trend among many pharmacists and chemists is favorable to radical changes in the stock of drugs and preparations used for medical prescriptions, as, especially in the Austrian Pharmacopeia, there are contained obsolete mixtures and remedies. A substitution for these of the latest, well-known, well-tried remedies would add to the usefulness of the book. It is expected that a comparative study of the Austrian, English, French, German and American pharmacopeias will have beneficial results for each one.

Correspondence

Reciprocity and Qualifications as Viewed by the Illinois Board.

SPRINGFIELD, ILL., July 24, 1906.

To the Editor:—I can really see little occasion for replying to the very extraordinary comunication of Dr. B. D. Harison, secretary of the Michigan State Board of Registration in Medicine, which was published in THE JOURNAL July 21, under the above caption. As my silence might be misconstrued, however,—not by Dr. Harison, but by other readers of THE JOURNAL—I take occasion to comment on his various remarks.

Dr. Harison exhibits unwarranted temper and marked discourtesy in his communication. It might be well if, before undertaking further correspondence concerning a sister medical examining body, if Dr. Harison would cultivate a "judicial temperament" and realize that he "represents a state rather than a base-ball organization."

It must be apparent to every reader of THE JOURNAL that Dr. B. D. Harison, secretary of the Michigan State Board of Registration in Medicine, concerns himself unnecessarily with the administration of the law regulating the practice of medicine in the State of Illinois. The Illinois State Board of Health alone is clothed with power to enforce the provisions of this law, and to determine the standards necessary to its enforcement, and that board alone is responsible for the proper performance of such duty. For its laches—if of laches it be guilty—that board must account only to the people of the State of Illinois. It is not answerable to Dr. Harison or to

any other citizen of Michigan. If the law be enforced so that the State of Illinois is left open to all who possess proper qualifications, neither Dr. Harison nor any other citizen of Michigan has ground for complaint.

The secretary of the Michigan State Board of Registration in Medicine, however, has always been unduly solicitous as to the welfare of the physicians of Illinois, who, by the way, seem eminently qualified to guard their own interests, and who would doubtless be unable to understand the occasion for such solicitude. For fully five years Dr. Harison has unsuccessfully endeavored to foist on the Illinois State Board of Health a form of reciprocity which, if adopted, would nullify the provisions of the medical practice act now in force in the state—a form of reciprocity which would compel the Illinois State Board of Health to license without examination all physicians of Michigan and other states who were licensed in their respective states in 1889, or in previous years, merely on presentation of their diplomas. The organized medical profession of Illinois—as represented in the Illinois State Medical Society, the Illinois State Homeopathic Association, the Illinois State Eclectic Society, and other recognized organizations—is not and has not been in favor of this form of "reciprocity," as was amply demonstrated by the action of these organizations in connection with the bills to regulate the practice of medicine in the state, introduced in the general assemblies of 1889 and 1903. These bills, supported by the organized profession representing all schools of practice, provided for the examination of all applicants.

Dr. Harison, however, still terms his form of reciprocity "the only constitutional and legal method of reciprocity," and in frequent communications to Illinois physicians, has tearfully deplored the fact that Michigan's endeavors to impress the merits of this form of reciprocity on the Illinois board have not been attended with success.

It may be remarked here, in passing, that Illinois reciprocated—as she now reciprocates—in the case of licenses issued after examination, before the Michigan State Board of Registration in Medicine was organized, and that the Illinois State Board of Health was organized to enforce the medical practice law of the state, twenty-two years before the state of Michigan had a medical practice law. At the feet of a Gamaliel Illinois would sit, but she would fain not seek the guidance of an infant prodigy.

As to Dr. Harison's references to the attitude of the Illinois State Board of Health toward the year's practice and supplemental examination requirements of Qualification No. 1 of the American Confederation of Reciprocating Examining and Licensing Medical Boards (I might say, "so-called American," if I were inclined to quibble), it is sufficient to say that neither of these requirements has been approved or enforced by Michigan. If the provision requiring a supplemental examination constitutes a "saving clause," it might be asked why Michigan does not avail herself of this means of salvation. The fact is that Michigan, like Illinois, believes in full and unrestricted reciprocity. Michigan, like Illinois, realizes that the requirements of no two states can be identical, and that reciprocity which requires a licentiate of another state to pass a supplemental examination is reciprocity in name only.

Illinois withdrew from the American Confederation—of which she was never a full member—simply because she would not subscribe to the so-called Qualification No. 1 of the confederation, which does not provide for full reciprocity; and because she could not (and parenthetically, would not), agree to the so-called Qualification No. 2, under the provisions of which the Illinois State Board of Health would be compelled to license without examination all graduates of recognized colleges who obtained licenses in other states—simply for the asking—on the presentation of their diplomas prior to July 1, 1899. As these two qualifications form the basis and foundation of the American Confederation, it would be eminently inconsistent as well as entirely useless for the Illinois State Board of Health to remain a member.

"But what does Illinois offer to the physicians of other states in lieu of Qualification No. 2?" the reader may ask at this juncture. Simply a "square deal." Illinois enforces the provisions of the statutes and subjects each applicant to an examination, but in this examination she takes cognizance of the years of practice of the applicant and gives credit therefor—the longer the practice the greater the credit. A New York physician, who was graduated in 1886, coming to Illinois to practice, is required to pass an examination, in accordance with the provisions of the law. The board, however, avails itself of the "horse sense" which should be an inherent attribute of every medical examining organization, and makes allowance in the examination for the actual experience of the applicant, giving him a credit of five points on the required 75 per cent. for every five years of practice.

The same physician going to Michigan would be subjected to the same examination as is given to the graduate of 1906, and his answers would be graded like those of the recent graduate. Yet Michigan would license, without examination, a physician who was licensed in Wisconsin a few years ago, on the presentation of a diploma. In view of such conditions, it hardly becomes Dr. Harison to talk of consistency.

Dr. Harison quotes from a communication written by me, in which, as he correctly states, I protested against the adoption by the confederation of a certain prerequisite qualification. He takes up nearly a column of space in an endeavor to show the inconsistency of the Illinois State Board of Health in protesting against this prerequisite qualification, and in later subscribing to a "like qualification," and asks me to point out to the readers of THE JOURNAL wherein the material distinction lies. I must decline to insult the intelligence of the readers of THE JOURNAL. Dr. Harison may see the analogy between a resolution which makes it incumbent on an applicant for reciprocal registration to show proof of membership in a medical society, and to present a certificate of recommendation issued him by a vote of the society (the prerequisite referred to), and a resolution which empowers the applicant to procure letters of recommendation from any one of four different sources, only one of which is a medical society—but I doubt if any other reader of THE JOURNAL will.

Dr. Harison also asks me to demonstrate to the readers of THE JOURNAL wherein lies the material distinction between the present revised prerequisite of the confederation and the reciprocal resolution of the Illinois State Board of Health, adopted on June 20. I would simply refer the reader to the prerequisite and to the resolution as quoted by Dr. Harison in his communication, with the suggestion that a comparison of the two will make the distinction quite apparent.

Dr. Harison is reminded that the Illinois State Board of Health did *not* withdraw from the confederation "as a protest against the prerequisite" and did not "afterward subscribe to a like qualification." Dr. Harison is gently reminded also that *he* likewise expressed the opinion that "the prerequisite of the American Confederation complained of" (the prerequisite quoted in "Secretary Egan's letter" of Feb. 26, 1906), was not constitutional.

With prodigal expenditure of words and space, Dr. Harison attempts to ascertain by what method the Illinois State Board of Health "measures 'a physician of national reputation.'" Without intending the slightest discourtesy to Dr. Harison, I will say that this is a matter with which the secretary of the Michigan State Board of Registration in Medicine need have no concern. The matter is one which affects particularly, and directly only, the physician who applies for registration under reciprocity in the State of Illinois.

Going further, Dr. Harison accuses the Illinois State Board of Health of usurping the authority of the legislature of the State of Illinois in exempting from examination certain medical officers of the United States Army and Marine and Public Health Service. If this charge is well founded, the Illinois State Board of Health is answerable to the State of Illinois. While again disclaiming any intent of offering discourtesy to Dr. Harison, I will say that this also is a matter with which the secretary of the Michigan State Board of Registration in Medicine has no concern. A satisfactory explanation of this or of the foregoing action of the Illinois State Board of Health, however, is obtainable at any time by any physician or citizen of the State of Illinois.

While the concluding remarks of Dr. B. D. Harison, secretary of the Michigan State Board of Registration in Medicine, concerning the Illinois State Board of Health, merit naught but silence, a few comments relative thereto may be interesting, and, perchance, instructive.

Dr. Harison says "the Illinois board has always been held by members of the confederation as a more or less turbulent and wayward sister, subject to occasional disturbed periods . . ." If a refusal to accept a qualification which would obligate the Illinois State Board of Health to license without examination all graduates of recognized medical schools who were licensed in Michigan and other states before July, 1899, without examination; if a refusal to subscribe to an obviously unconstitutional provision; if a refusal to accede to a rule which provided for but partial reciprocity, instead of the full reciprocity advocated and carried out by the Illinois State Board of Health—if these things constitute "turbulent and wayward characteristics," or bear evidence of "disturbed periods," then the Illinois State Board of Health admits the soft impeachment.

But I have no recollection of ever having seen Dr. Harison or any other member of the confederation arise from his seat at a meeting of the confederation and express the opinion that the Illinois State Board of Health was "a more or less turbulent and wayward sister, subject to occasional disturbed periods."

At no meeting of the confederation at which the president or secretary of the Illinois State Board of Health was present has Dr. Harison even taken exception to the attitude or views of the Illinois State Board of Health, notwithstanding that the Illinois board persistently declined to be governed by the provisions of both of the so-called qualifications of the confederation, and notwithstanding that, at one meeting of the confederation, the president, Dr. George W. Webster, gravely moved that Qualification No. 2 be burned.

Dr. Harison's remedy for ills which he perceives in Illinois is worthy of note. He says:

> The treatment advocated by the Illinois State Medical Society of the excision of the medical registration function from the public health department in Illinois, to my mind, is the only method promising a radical cure.

The interest manifested by the secretary of the Michigan State Board of Registration in Medicine in the regulation of medical affairs in Illinois is indeed praiseworthy. The fact that he might more profitably confine his attention to the regulation of medical affairs in his own state; the fact that the medical profession of Illinois will no doubt ignore his gratuitous suggestions as persistently as the Illinois State Medical Society has ignored, during the past five years, his likewise gratuitous recommendations concerning amendments to the present law, will in no manner detract from his earnestness of purpose or dampen his burning ardor. Let his epitaph be: "He done his best."

It is unfortunate, however, that in his earnest endeavor to institute reforms in Illinois, the secretary of the Michigan State Board of Registration in Medicine should indulge in personalities, show lack of ordinary courtesy, and exhibit obvious ignorance of facts.

The Illinois State Medical Society has never advocated "the excision of the medical registration function from the public health department of Illinois." At no time—I speak with certainty as to the past ten years—has the Illinois State Medical Society by action, vote or resolution, even intimated that the regulation of the medical laws of Illinois should not be performed by the State Board of Health.

On several occasions since its organization in 1877, the Illinois State Board of Health has recommended the creation of a State Board of Medical Examiners, which would relieve the State Board of Health of a portion of the duties imposed on it by law. In his first report to the State Board of Health, in 1897 (page 38, Twentieth Annual Report), the present secretary made the following remarks:

> The secretary can not refrain from expressing the opinion, which is in accordance with the views of observers of wide experience, that there is imperative need for the creation of a State Board of Health free to perform sanitary duties alone.

This recommendation of the creation of a State Board of Medical Examiners was reiterated by the secretary in a paper read before the Illinois State Medical Society in 1898, and in each annual report to the governor made by the secretary from 1898 to 1903, this recommendation was repeated.

Following the recommendations of the Illinois State Board of Health, the Illinois State Medical Society, in 1897, 1899 and 1903, made attempts to secure the passage of bills creating a State Board of Medical Examiners. The bills of 1899 and 1903, which received the endorsement of the society at the meetings in the years immediately previous—were prepared by committees of the State Medical Society, of which the secretary of the State Board of Health was a member.

Dr. Harison should remember Artemus Ward's famous saying: "It is better not to know so much than to know so many things that ain't so."

But would the "excision method," if carried out, be a "radical cure" for the "symptoms" which, according to the opinion so courteously expressed by Dr. Harison, "suggest degenerative processes?" I think not.

The Illinois State Medical Society, in 1902 and 1903, unanimously endorsed and approved a bill providing for the examination of all persons desiring to enter into practice in Illinois—this notwithstanding the fact that for two years previous "Michigan endeavored to impress on Illinois the virtue and necessity of recognizing what undoubtedly is the only constitutional and legal method of reciprocity." It is obvious that the State Board of Medical Examiners proposed in this bill would not have subscribed to the so-called Qualification No. 2. It is extremely probable, also, that if the State Board of Medical Examiners had become a member of the confederation, it would have withdrawn as soon as it saw that it could not subscribe to either of the two "qualifications" on which the confederation is founded.

There is but little justification for the assumption that a proposed State Board of Medical Examiners would not have adopted a reciprocity resolution similar to that adopted by the Illinois State Board of Health on June 20, 1906; there is no reason to believe that the proposed State Board of Medical Examiners would not have accepted, in lieu of its own examination, the examination of the United States Army, the Navy and the Public Health and Marine-Hospital Service.

In view of all this, I fear that the "method" so confidently offered by Dr. Harison, would fall far short of accomplishing a "radical cure."

In viewing Dr. Harison's communication calmly and fairly, I cannot resist the conclusion that it was the result of impetuosity caused, perhaps, by the fact that the ideals which he had created, or which had been created by the organization in which he has taken a most active part, with which he confidently expected to solve all of the problems of medical practice and reciprocity for his own and for sister states, have not been accepted or taken with a sufficient degree of seriousness by the Illinois State Board of Health, or by the physicians of Illinois. It is only by assuming that the Illinois State Board of Health, in withdrawing from the American Confederation, in some way trod on Dr. Harison's personal sensibilities that I can account for his choleric outburst.

A few words in conclusion: Dr. Harison may desire to comment further on the attitude and actions of the Illinois State Board of Health, and propound further interrogatories to its secretary concerning the administration of the Illinois medical practice act. If so, Dr. Harison will be accorded an excellent opportunity at the next meeting of the National Confederation of State Medical Examining and Licensing Boards, a national organization which will hold its seventeenth annual meeting in 1907.

It will gratify the president and secretary of the Illinois State Board of Health, if the secretary of the Michigan State Board of Registration in Medicine will appear at this meeting, and in their presence and that of members of examining and licensing organizations throughout the United States, express the opinion (which he has never expressed at a meeting of the American Confederation) that Illinois is a "more or less turbulent and wayward sister"; take Illinois to task on account of the faulty administration of its med-

ical laws and its attitude toward reciprocity (which he has never done at a meeting of the American Confederation), and audibly manifest a yearning for knowledge concerning the Illinois board which he has shown in his recent communication. The Illinois State Board of Health will be represented at this meeting, as she has been represented at meetings during the past sixteen years.

JAMES A. EGAN.

The Medical Association of the Southwest.

EL RENO, OKLA., July 24, 1906.

To the Editor:—In keeping with the expressed wish and plan of the American Medical Association to organize the United States into several districts and to organize in these districts associations which will be allies to the American Medical Association, and because commercially, geographically and socially the several states grouped together here have for years been known as the Southwest, the state associations of Missouri, Kansas, Arkansas, Oklahoma-Indian Territory and Texas were asked at the spring association meetings to appoint five men, who should be called together to consider the advisability of such an organization. Each state responded by appointing the desired number, and on July 16, at Kansas City, a meeting was called. Fourteen members responded, as follows: Drs. Jabez N. Jackson, Frank J. Lutz and Charles Wood Fassett, of Missouri; C. E. Bowers, George M. Gray, M. F. Jarrett and H. L. Alkire, of Kansas; T. E. Holland, J. A. Lightfoot and J. B. Bolton, of Arkansas; J. E. Gilcreest, of Texas; B. F. Fortner, of Indian Territory, and A. L. Blesh and F. H. Clark of Oklahoma. A temporary organization was effected, with Drs. F. J. Lutz, St. Louis, as president; J. T. Wilson, Sherman, Tex.; Marion King, Texarkana, Ark.; P. S. Mitchell, Iola, Kan., and C. S. Bobo, Norman, Okla., vice-presidents, and F. H. Clark, El Reno, Okla., secretary-treasurer.

A lengthy discussion was indulged in by all present as to the desirability of the contemplated move and all present agreed that it was the thing to do.

It was decided to hold the first general meeting of the association at Oklahoma City this fall, the exact date to be determined as soon as possible. A committee, composed of Drs. A. L. Blesh, Oklahoma; Jabez N. Jackson, Missouri; J. A. Lightfoot, Arkansas; C. E. Bowers, Kansas, and J. E. Gilcreest, Texas, was appointed to draft a declaration of principles and a constitution and by-laws; the committee was requested to report the declaration of principles to the convention while in session and the constitution at the first general meeting of the association.

The committee reported the following declaration:

To the Medical Profession of the Southwest:—By virtue of the authority delegated us by our several state associations to consider the advisability of the formation of a medical association of the southwest, and to define its purposes, scope and sphere of action, we, your committee, here, in pursuance of such instructions, this day met and beg leave to present the following conclusions: That the time is now opportune for the formation of a medical association of the southwest and respectfully urge that in consideration of the fact that the territory composed of the states of Missouri, Kansas, Arkansas, Oklahoma, Indian Territory and Texas are engaged in the active practice of the profession of medicine between 15,000 and 20,000 of as bright and intelligent physicians as can be found anywhere, who, because of the natural limitations of the state association on the one hand and the magnitude of the American Association on the other, lack the proper opportunity for the full development of their powers.

We believe that the formation of an association of the states mentioned above will materially aid in developing this latent talent and thus advance the standard of scientific medicine in the whole nation.

We believe that the membership of this association should be limited to those members of the profession who are in good standing in their respective state associations.

We believe that an association of this kind will satisfactorily fill the present existing hiatus between the state association on the one hand and the American Medical Association on the other, occupying a field peculiarly its own, adding increased effectiveness to the work of the one and at the same time training talent to adorn the other.

We would respectfully call the attention of the profession of the great southwest to the fact that this step is in harmony with the idea expressed at the late meeting of the American Medical Association and in its constitution (section vii) of dividing the United States into districts, so as to make its work more effective and more truly representative of the whole body of the profession in the United States.

We would especially call the attention of the profession to the fact that this association is not to be organized in opposition to, but rather in harmony with, all existing regular associations.

We recommend that the name of this association be the Medical Association of the Southwest.

We invite the careful consideration of the medical profession of the states above mentioned to the reasons given, and if they meet with their approval extend a cordial invitation to them to join with us in making this, as it of right should be, one of the strongest working medical bodies in the United States.

After a thorough discussion the declaration was unanimously adopted. A program committee was appointed, consisting of Drs. J. E. Gilcreest, J. D. Bolton, H. L. Alkire and the president and secretary.

Dr. H. C. Todd, Oklahoma City, was appointed chairman of the committee of arrangements, and the program committee was instructed to provide for the program in sections. The committee then adjourned to meet on the evening preceding the first session of the association at Oklahoma City, Okla.

F. H. CLARK, Secretary-Treasurer.

The Gelatin Method of Preserving Specimens.

IOWA CITY, IOWA, July 28, 1906.

To the Editor:—It appears that my article on the gelatin method of preserving specimens, which appeared in THE JOURNAL A. M. A., June 30, 1906, has created considerable interest as manifested by the communications of Professor Watters (see THE JOURNAL A. M. A., July 14) and Dr. Hall (July 28).

In justice to Professor Watters I would like to say that I do not think that he claims to be the originator of the gelatin method of preserving specimens, but that he simply claims priority in the Petri-dish-glycerin-jelly method of mounting objects. In justice to myself, permit me to say that I did not claim in the original article to be the originator of the glycerin-jelly method of mounting specimens nor the first to conceive the idea of the use of the Petri-dish for that purpose. The idea of inclosing stained microscopic sections of the gross specimen in the preparation, and the special device attached to a hand microscope, making it possible to examine the gross and microscopic preparations at the same time, are not only original with me, but so far as I know, no mention of them has ever appeared in print previous to the publication of my article. These being very desirable modifications or rather additions to the Petri-dish-gelatin method, I considered that it was entirely legitimate to speak of it as "A New Method of Mounting Museum Preparations."

HENRY ALBERT, M.D.

Hay-fever Treatment by Dunbar's Remedies (Pollantin).

CHICAGO, July 23, 1906.

To the Editor:—As the hay-fever season approaches, physicians are interested in any remedy which promises to give their patients relief. Much has been published during the last three years of the treatment devised by Professor Dunbar, and many physicians have given it an extensive trial, I among the number; but I cannot subscribe to the extravagant statements that have been made in its favor.

Three years ago I tried the serum on several patients, but without effect. Year before last I tried the pollantin powder (the dried serum) in a number of cases, and in only one did I get a report that it had done good.

At the 1905 meetings of the American Laryngological Association and of the Americal Laryngological, Rhinological and Otological Society, the subject of the treatment of hay-fever by these remedies was under discussion. In each of these meetings there were from 30 to 50 laryngologists present. In both instances there were one or two members who spoke with some favor of the use of pollantin, and ascribed the poor results of treatment by pollantin the previous year to the quality of the remedy used, it being stated that for those persons who were affected by the pollen of certain grasses or ragweed a different pollantin should be used from that adapted for those who were affected by the pollen of the golden rod. No one else in either of these meetings appeared to have any confidence in the results to be obtained from these remedies.

I came away from both meetings with the feeling that possibly I had not been careful enough in my direction to patients who were to use the remedy, and that I had probably not had

the proper pollantin. Therefore, during last summer, I obtained the different kinds of pollantin, according to the conditions in individual patients.

I cannot, without great labor, search out the various records, as they are scattered alphabetically through thousands of other records, and the only way that I can find them at all is to pick them out by the disease, and even this would be a tedious undertaking. I had one of my assistants spend a day in looking up these cases, and although he found a great many of hay-fever he only found eight in which the pollantin had been used, though I am confident I employed it in 15 or 20 cases last summer.

I have yet to hear of a single one in whom it apparently did any good. In the records that were found I am sure that it did no good, and I feel confident that in the others, had it been beneficial, they would have reported to me.

As an example, I merely cite one. This patient I had make a trip of 800 miles in order to test the remedy carefully. He came to me from the north during the middle of the season, having been practically free from his symptoms in northern Wisconsin; but the next morning after arriving in the city the trouble began. I used pollantin carefully and thoroughly with him for about ten days, and then was obliged to send him away. In answer to my question as to whether he thought it did him any good, he replied he thought it did some good, but I had been watching him closely every day and I failed to see that it gave the slightest relief.

As a result of my experience, in probably 30 to 40 cases all told, I believe that it will not give relief in more than 1 or 2 per cent., and that in these the relief would be temporary and not very great. E. FLETCHER INGALS.

[The above report by Dr. Ingals on the use of pollantin is not encouraging. Others may have had better results; if so, we shall be glad to publish them. Professor Dunbar is controlling this serum—in other, words, it is a proprietary medicine. But even so, if it is a good thing, that fact should be known; if it is not, this also should be made known. It does not seem to be human, however, to publish our failures, no matter whether we are responsible for them or not. And yet, when a new remedy is introduced, it seems to us that it is the duty of those experimenting with it to give their results for the benefit of others. In the present instance, the beneficial side will be given due publicity by those whose interest it is to have the substance used. This is the hay-fever season, and if there is anything that is especially valuable in its treatment, by all means let those who have to treat it know about it. But let us have both sides.—EDITOR.]

Cocain in Tucker Asthma Cure.

BOSTON, July 20, 1906.

To the Editor:—Having repeatedly found that patients coming to me for medical advice were using the secret remedy for asthma sold by Dr. N. Tucker of Mount Gilead, Ohio, I naturally became desirous of knowing its composition. It is employed locally by means of an atomizer, and those using it have claimed that they experienced undoubted relief from its employment. At my suggestion a man obtained for me some of the remedy and gave it to me in the bottle in which he bought it. It has been examined by Dr. Frank Piper and Dr. Julian W. Baird, both of Boston, and both find that it contains cocain. Dr. Baird, who is dean of the Massachusetts College of Pharmacy and has been teaching chemistry for over twenty years, also made a quantitative examination, demonstrating a little over 7 grains of the hydrochlorate of cocain to each ounce of the remedy.

It seems to me that others besides myself may be very glad to know this fact, in order to give their patients advice concerning the "cure." Further, I should like to inquire whether a secret remedy with so dangerous an ingredient can be legally distributed by means of the United States mails, and if not, whether it would not be well for the American Medical Association officially to call the attention of the Postmaster General to the facts. HERMAN F. VICKERY.

263 Beacon Street.

Book Notices

THE OPERATIVE TREATMENT OF FRACTURES. By W. Arbuthnot Lane, M.S., F.R.C.S., Surgeon to Guy's Hospital and Senior Surgeon to the Hospital for Sick Children. Paper. Pp. 144. Price, $1.87. London: The Medical Publishing Company, Limited, 1905.

This book is a statement of and argument for the author's well-known advocacy of operative accurate adjustment and retention of bone fragments. First are considered the changes in the skeleton produced by unusual function, as the habitual carrying of heavy loads. The skeleton is subject likewise to vicious structural change as the result of abnormal transmission of weight due to malunited fractures. Particularly the joints, whether or not near the fracture, may thus suffer. The individual fractures are then taken up. At the end the operative technic is described. Screws, silver wire or staples and silver plates are used; "generally speaking, the screw is by far the most efficient and most powerful means by which the fragments can be retained immovable on one another." These are removed later. The need for the most exacting asepsis is emphasized; only the unhandled ends of long instruments are allowed in the wound. Age is no barrier; indeed, often increases the need for operation to avoid prolonged recumbency. "If due care be taken and reasonable skill be exercised the risk is practically *nil*." The book is filled with excellent radiographic illustrations.

AN ESSAY ON THE GENERAL PRINCIPLES OF THE TREATMENT OF SPINAL CURVATURES. By Heather Bigg, F.R.C.S. Ed. Cloth. Pp. 240. Price, $2.00. London: J. & A. Churchill, 1905.

This is a plea for the author's method of treating lateral curvature, which is by the use of a brace worn during the day and a jacket at night. The brace consists of a steel pelvic band fixed by gored webbing that laces around and over the hips; from this arise two lateral steels that buoy the trunk by axillary crutches, and two posterior median spring steels that have been tempered in a corrected position; the interspaces of this four-upright frame are filled by lacing-pieces both behind and in front. The night jacket is made of any suitable stiff material (stiffened felt, stiffened leather or plaster-Paris) on a plaster-Paris cast of the trunk that has been shaved off and filled in to a corrected shape. The book is devoted to the consistent effort to support the principles underlying this form of treatment, the principles of "advenience," i. e., adaptation to a straightening force and increase of correctability by up-buoying. Historical and modern methods of treatment are critically considered, and Mr. Roth's posture and exercise treatment warmly opposed. The argument is strongly constructed along theoretical lines, only one case being reported. Whatever the truth of the contention for which the book stands, it is certainly a good example of escape on the one hand from unreasoning dogmatism and on the other from unopinionated narration.

CAUSE AND PREVENTION OF DENTAL CARIES. By J. S. Wallace, M.D., D.Sc., L.D.S., Hon. Dental Surgeon, West End Hospital for Nervous Diseases; and Assistant Dental Surgeon, National Dental Hospital. W. Cloth, Pp. 81. Price, 2s. 6d. net. London: Bailliere, Tindall and Cox, 1906.

In this work, Dr. Sims Wallace claims that "the cause of the prevalence of dental caries is that the natural food-stuffs are to a large extent ridded of their accompanying fibrous parts and prepared and consumed in a manner which renders them liable to lodge and undergo acid fermentation in the mouth."

Crowding of the teeth is a fruitful predisposing cause of caries acknowledged by Dr. Wallace, yet he attributes the crowding "to want of development of the tongue from lack of fibrous material in the food-stuffs. Removal of this fibrous material from the food-stuffs robs the tongue of a certain amount of activity, and so interferes with its development."

The trend of pathology is against the local influence on which so much stress is laid by Dr. Wallace and in favor of developmental elements. Caries is an expression of one senile tendency as opposed to another; of osteomalacia as opposed to calcification. The calcification tendencies of embryogeny are local rather than general. The calcification tendencies of senescence are general, not local. The calcified arteries of old age are a familiar illustration. Furthermore, calcification is an expression of tissue degeneration, sometimes exerted at the expense of dangerous products like those of tuberculosis.

Osteomalacia is an expression at certain periods of normal involution. Structures even in embryogeny which are not needed, disappear by involuntary tendencies. Crowded teeth are notoriously products of constitutional tendencies and deficiencies, and hence cannot be affected by the influence of temporary conditions of the tongue. These last conditions are quite frequently results of constitutional factors underlying conditions of the tongue. The hypothesis of Dr. Wallace, it will be obvious, does not comply with scientific requirements; it does not explain all the facts nor does it exclude all other explanation. The book is one more illustration of the waste of medical research, which results when an incomplete working hypothesis is adopted. A little knowledge of developmental pathology would have prevented all this waste.

Manual on Operative Surgery. By John Fairbairn Binnie, A. M., C.M., Aberdeen. Second edition, revised and enlarged. Pages X plus 665, with 567 illustrations. Philadelphia: P. Blakiston's Son & Co., 1905.

The excellence of this manual on surgery is evidenced by the fact that in nine months after the appearance of the book, a second edition was demanded. The author modestly states that in the second edition he has taken advantage of the hints kindly thrown out by reviewers and friends. Among the additions are a description of the bur operation on the mastoid, an illustrated summary of the recent advances in cerebral localization and a short section on the duodenum and peritoneal tuberculosis. Binnie has, by the revision, improved a work, the first edition of which received well-deserved commendation by reason of its clearness, completeness and conciseness.

Personal Hygiene. Designed for undergraduates. By Alfred A. Woodhull, A.M., M.D., LL.D. (Princ.), Brigadier-General U. S. Army (retired), late Colonel Medical Department U. S. Army. Cloth, 12mo. Pages VII plus 221. Price, $1.00 net. New York: John Wiley & Sons, 1906.

This little book contains the substance of the lectures given by General Woodhull at Princeton University, and presents the important points on personal hygiene in plain and simple language. The first half of the book is devoted to a description of the body and its functions; the latter contains chapters on the development and care of the body, physical culture exercises, fatigue, elimination of waste, "catching cold," swimming, bathing and clothing, and the last three chapters are devoted to the questions of food, tobacco and alcohol.

A Text-Book on Modern Materia Medica and Therapeutics. By A. A. Stevens, A.M., M.D., lecturer on Physical Diagnosis, University of Pennsylvania; Professor of Pathology, Woman's Medical College of Philadelphia. Fourth edition, revised. Cloth, 670 pages. Price, $3.50 net. Philadelphia: W. B. Saunders & Co., 1905.

The fourth edition of this work is revised and adapted in conformity with the eighth decennial revision of the United States Pharmacopeia. There have been extensive additions to the section on radio therapeutics, new articles on scopolamin, ethyl chlorids, theosin, veronal and radium have been prepared and the changes in the names or strengths of the drugs called for by the revised Pharmacopeia have been made.

Heath's Manual of Surgery and Bandaging.—For the use of house surgeons, dressers and junior practitioners, thirteenth edition, revised by Dr. Bilton Pollard, F.R.C.S., surgeon to University College Hospital, etc. Cloth, XIV plus 221 pages. Price, $1.50 net. Philadelphia: P. Blakiston's Son & Co., 1906.

The revisor of this work has made alterations and additions required by the progress of the science, and the subject-matter has been brought up to date.

Marriages

Walter S. Given, M.D., to Miss Funk, both of Indianapolis, recently.

Robert H. Herbst, M.D., to Miss Grace Adele Bellows, both of Chicago, July 25.

Port McWhorter, M.D., to Miss Helen Augusta Waters, at Miller, S. D., July 25.

William A. Wilson, M.D., Willard, N. M., to Miss Lorena M. Kortkamp of Hillsboro, Ill., July 10.

Charles Emmons, M.D., Hanoverton, Ohio, to Miss Jennie Heestand, of Homeworth, Ohio, July 19.

Carl Shellman, M.D., Pitsanuloke, Siam, to Miss Mary Carnahan Guy, at St. Paul, Minn., July 11.

Herbert Taylor Harris, M.D., Dietz, Wyo., to Miss Cornelia Ryder Burton of Collinsville, Ill., June 27.

Elwood Gray, M.D., Otwell, Ind., to Miss Myrtle Lemmon, of Boone Township, Dubois County, Ind., July 16.

Deaths

Shaw F. Neely, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1865; for four terms mayor of Leavenworth, Kan., and during the second term of President Cleveland, United States marshal for the eastern district of Kansas; acting surgeon of the One Hundred and Sixty-fifth Pennsylvania Volunteer Infantry during the Civil War; for several years publisher of the Leavenworth *Evening Standard*, died at his home in Leavenworth, July 20, from angina pectoris, after a short illness.

Eugene F. McQuesten, M.D. Jefferson Medical College, Philadelphia, 1886, one of the best known physicians of Nashua, N. H.; well-known as an alienist and as an expert witness in insanity cases; a member of the American Medical Association and American Association of Railway Surgeons; for many years member and once president of the New Hampshire Medical Society and of the Nashua Medical Society, died at Squirrel Island, Maine, from heart disease, July 19, after an illness of several months, aged 62.

Sophronie Fletcher, M.D. New England Female Medical College, Boston, 1854, said to have been the oldest woman physician in the United States, professor of physiology at Mount Holyoke Seminary more than fifty years ago, died at her home in Cambridge, Mass., July 20, from pneumonia, after an illness of four days, aged 99.

Augustus Niles, M.D. Bennett College of Eclectic Medicine and Surgery, Chicago, 1875, a member of the State Board of Medical Examiners of Pennsylvania since 1894, and a member of the Medical Council of Pennsylvania, died at his home in Wellsboro, July 23, from heart disease, after a long illness, aged 52.

Charles B. McAnally, M.D. New York University, New York City, 1887, a prominent physician of North Carolina, a resident of Madison, and a member of the American Medical Association, died in St. Luke's Hospital, Richmond, Va., July 15, after operation for the removal of renal calculus.

Benjamin F. Clark, M.D. Medical College of Ohio, Cincinnati, 1881, for seventeen years local surgeon of the Baltimore and Ohio railway, assistant police surgeon of Cincinnati, died at his home in that city from pulmonary abscess, July 18, after an illness of three weeks, aged 49.

Pierre Desnoyers Peltier, M.D. University of Buffalo (N. Y.) Medical Department, 1860, assistant surgeon of the One Hundred and Twenty-sixth New York Volunteer Infantry during the Civil War, died at his home in Collinsville, Conn., from angina pectoris, July 21, aged 70.

John H. Love, M.D. Cincinnati College of Medicine and Surgery, 1870, a member of the American Medical Association, formerly coroner of Ventura County, Cal., a prominent physician of Ventura, died at his home in that city, July 23, from cerebral hemorrhage, aged 59.

Carl Frederick Zimmerman, M.D. Medical College of Indiana, Indianapolis, 1889, a member of the Indiana State Medical Society, Vigo County Medical Society and Esculapian Medical Society of the Wabash Valley, died at his home in Terre Haute, Ind., July 17, aged 48.

John Kirkpatrick, M.D. University of Victoria College, Coburg, 1877; College of Physicians and Surgeons of Ontario, 1880; M. R. C. S., England, 1877; who served during the Turko-Russian War as a Red-Cross surgeon, died July 9, at Toronto.

William S. Channing, M.D. Physio-Medical College of Indiana, Indianapolis, 1891, of Pendleton, Ind., a member of the Madison County Medical Society, died in the Presbyterian Hospital, Chicago, June 28, after an illness of nine weeks.

Sarah T. R. Eavenson, M.D. American College of Medicine in Pennsylvania and Eclectic College of Medicine, Philadelphia, 1860, a prominent member of the Society of Friends, Philadelphia, died at Buck Hill Falls, Pa., July 20, aged 82.

Amelie D. F. Von Der Lube, M.D. New York Medical College and Hospital for Women, New York, 1889, died at her home in Greenport, Long Island, July 21, after an illness of nearly two years, aged 46.

John Donaldson Potter, M.D. University of Wooster, Medical Department, Cleveland, 1871, died suddenly at his home in Mount Oliver, Pittsburg, from heart disease, July 22, aged 60.

Willis C. Glidden, M.D. Chicago Homeopathic Medical College, 1879, died at his home in De Kalb, Ill., July 15, from diabetes, from which he had suffered for several years, aged 56.

Thomas C. Thomas, M.D. Kansas City Hospital College of Medicine, Kansas City, Mo., 1885, died at his home in Peoria, Ill., July 21, after an illness of three years, aged 69.

Neal B. Gay, M.D. Jefferson Medical College, Philadelphia, 1850, said to have been a direct descendant of Pocahontas, died at his home near Fork Union, Va., July 16, aged 79.

Albert H. Taft, M.D. Medical School of Maine, at Bowdoin College, Brunswick, 1867, a veteran of the Civil War, died at his home in Winchester, N. H., June 25, aged 69.

Thomas M. Curtis, M.D. Long Island College Hospital, Brooklyn, of Boston, died in Madison, N. H., May 11, from tuberculosis, after an illness of two years, aged 47.

Arthur C. Ridout, M.D. Homeopathic Hospital College, Cleveland, 1894, is reported to have committed suicide by strangulation at his home in Ravenna, Ohio, July 21, aged 45.

Onslow M. Kingsbury, M.D. Medical School of Maine, at Bowdoin College, Brunswick, 1873, of Georgetown, Maine, died at Harmon's Harbor, May 15.

Thomas F. Madill, M.D. Jefferson Medical College, Philadelphia, 1865, died at his home in Wysox, Pa., June 27, from acute laryngitis, aged 78.

James W. Chisholm, M.D. Baltimore Medical College, 1902, was drowned July 23, while bathing at Glace Bay Beach, Cape Breton, aged 31.

James M. Stringham, M.D. Hahnemann Medical College and Hospital, Chicago, 1887, died at his home in Carson City, Mich., July 20.

Albert F. Piper, M.D. New York Homeopathic College and Hospital, 1875, died suddenly at his home in Rockport, Me., June 22.

Ernest Guy Cawley, M.D. Baltimore Medical College, 1900, died at his home in Haverhill, Mass., July 10.

William F. Cornick, M.D. died in Princess Anne County, Va., July 26.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS will not be noticed. Queries for this column must be accompanied by the writer's name and address, but the request of the writer not to publish name or address will be faithfully observed.

CANCER—CAN IT BE CURED?

OHIO, July 30, 1906.

To the Editor.—In the August number of *McClure's*, there is an article on "Cancer—Can It Be Cured?" by C. W. Saleeby, M.D., F.R.S., (Edin.). In this article the writer gives an outline of Dr. John Beard's treatment of cancer with trypsin. Can you tell me how it is used, the dosage, etc., and where I may obtain the best trypsin in this country? Any information in regard to this treatment and endorsements in this country I will appreciate.

F. S. B.

ANSWER.—We are unable to give any further information in regard to the details of the trypsin treatment of cancer than those contained in Dr. Beard's article in the *British Medical Journal*, Jan. 20, 1906, and repeated with many extravagant flourishes in Saleeby's article in *McClure's Magazine* for August and elsewhere. "Those practising physicians who have already ventured to act on the . . . advice to prove all things, are—administering trypsin or pancreatic extract by the mouth, under the skin and where possible by local application." This treatment is yet wholly tentative and so far as we are aware it as yet has received no endorsements from the profession in this or any other country. The hypothetical basis of the treatment seems to us to be wholly inadequate and to offer little hope for any rational therapy of cancer. Nevertheless, the hopelessness of the outlook in cancer no doubt will continue to tempt many to try almost any form of treatment that is suggestive, no matter what the basis. The *British Medical Journal* article was abstracted in THE JOURNAL Feb. 17, 1906, p. 544, and commented on editorially March 10, 1906, p. 728 and 729. The first editorial in this issue also takes up the subject.

The Public Service

Army Changes.

Memorandum of changes of stations and duties of medical officers, United States Army, week ending July 28, 1906:

Lynch, Charles, surgeon, granted two months' leave of absence, to take effect about Aug. 1, 1906.

Shaw, Herbert G., asst.-surgeon, having reported arrival at San Francisco, is ordered to the Army General Hospital, Presidio, of San Francisco.

Heard, George P., asst.-surgeon, relieved from duty at Army General Hospital, Presidio, San Francisco, and ordered to Fort Wingate, N. M., for duty.

Rockhill, Edward P., asst.-surgeon, relieved from duty at Fort Wingate, N. M., and will proceed to San Francisco and take the first available transport sailing from that place for the Philippine Islands, where he will report to the commanding general, Philippines Division, for assignment to duty.

Phalen, James M., asst.-surgeon, granted leave of absence for four months and fifteen days, with permission to go beyond the sea.

Devereaux, J. R., asst.-surgeon, leave of absence extended thirty days.

Bispham, William N., asst.-surgeon, en route with Third Squadron, Fifth Cavalry, from Fort Wingate, N. M., to camp of instruction near Fort D. A. Russell, Wyo., for duty.

McCulloch, C. C., Jr., surgeon en route from Fort Meade, S. D., to camp of instruction near Fort D. A. Russell, Wyo., for duty.

Bloombergh, H. D., asst.-surgeon, left Fort Leavenworth, Kan., with Eighteenth Infantry, for duty at camp of instruction, Fort Riley, Kan.

Raymond, Henry I., surgeon, reports arrival at camp of instruction, Fort Benjamin Harrison, Ind., for duty.

Davis, William T., asst.-surgeon, left Army General Hospital, Washington Barracks, D. C., with Company A, Hospital Corps, en route to camp of instruction, Chickamauga, Ga., for duty.

Pinkston, Fred W., asst.-surgeon, relieved from temporary duty at United States military prison, Fort Leavenworth, Kan., and will report in person to the commanding general, Department of California, for assignment to temporary duty until Nov. 1, 1906, when he will report to medical superintendent of the Army Transport Service, San Francisco, for assignment to duty.

Davis, William B., deputy surgeon general, left headquarters, Department of the Lakes, Chicago, en route to camp of instruction, Fort Benjamin Harrison, Ind., for duty as chief surgeon.

Gilchrist, H. L., asst.-surgeon, reports arrival at Camp Roosevelt, camp of instruction, Mount Gretna, Pa., with Company A, Hospital Corps, for duty.

Reno, William W., asst.-surgeon, left Fort Riley, Kan., with troops on practice march.

Truby, A. E., asst.-surgeon, left Presidio, San Francisco, with Company B, Hospital Corps, en route to camp of instruction, Camp Tacoma, American Lake, Wash., for duty.

Rand, Irving W., asst.-surgeon, left Presidio, San Francisco, with troops, en route to camp of instruction, Camp Tacoma, American Lake, Wash., for duty.

Adair, George W., asst.-surgeon-general, left headquarters Department of Dakota, St. Paul, Minn., en route for duty as chief surgeon, camp of instruction, Islay, Wyo.

Patterson, R. U., asst.-surgeon, left Presidio, San Francisco, with Company B., Hospital Corps, en route to camp of instruction, Camp Tacoma, American Lake, Wash., for duty.

Smart, William M., asst.-surgeon, left Fort Caswell, N. C., en route to camp of instruction, Chickamauga Park, Ga., for duty.

Hoff, John Van R., asst.-surgeon-general, left headquarters Department of the Missouri, Omaha, en route for duty as chief surgeon, camp of instruction, Fort Riley, Kan.

Richard, Charles, surgeon, will, in addition to his other duties, take charge of the office of the chief surgeon, Department of the East, and perform the duties of that officer during the absence of Col. Philip F. Harvey, asst.-surgeon-general, on detached duty at Mount Gretna, Pa.

Noble, R. E., asst.-surgeon, left Vancouver Barracks, Wash., on leave of absence for one month, with permission to apply for an extension of one month.

Frick, Euclid B., surgeon, will, in addition to his present duties, take charge of the office of chief surgeon, Department of Dakota, St. Paul, during the absence of Col. George W. Adair, asst.-surgeon-general, U. S. Army, at camp of instruction near Fort D. A. Russell, Wyo.

Carter, Edward C., surgeon, left Fort Leavenworth, Kan., en route to camp of instruction, Fort Riley, Kan., for duty.

Rhodes, Thomas E., asst.-surgeon, left West Point, N. Y., on leave of absence to Aug. 4, 1906.

The following named assistant surgeons are relieved from duty in the Philippines Division, to take effect at such time as will enable them to comply with this order, and will proceed by the first available transport sailing after the dates set opposite their names, to San Francisco, and on arrival report by telegraph to the military secretary of the army for further orders: Loving, Robert C., first lieutenant, Sept. 30, 1906; Brown, O. G., first lieutenant, Sept. 30, 1906; Whaley, A. M., first lieutenant, Sept. 30, 1906; Lamson, Theodore, first lieutenant, Sept. 30, 1906; Heysinger, James D., first lieutenant, Sept. 30, 1906; Huggins, John B., first lieutenant, Sept. 30, 1906; Harris, J. R., first lieutenant, Oct. 8, 1906.

Borden, William C., surgeon, granted leave of absence for one month and fifteen days on surgeon's certificate of disability.

Brooks, William H., asst.-surgeon, left Fort Washington, Md., en route to camp of instruction, Camp Roosevelt, Mount Gretna, Pa., for duty.

Collins, C. C., asst.-surgeon, left Fort Walla Walla, Wash., en route to Camp Tacoma, camp of instruction, American Lake, Wash., for duty.

Harvey, Philip F., asst.-surgeon-general, reported at Camp Roosevelt, camp of instruction, Mount Gretna, Pa., for duty as chief surgeon.

Hereford, John R., cont.-surgeon, left Fort Moultrie, S. C., for duty at Fort Caswell, N. C.

Shelienberger, James E., cont.-surgeon, left Fort Sam Houston, Tex., for duty with troops en route to and at camp near Austin, Tex.

Leeper, John F., cont.-surgeon, left Fort Duchesne, Utah, with troops for duty at maneuver camp, Islay, Wyo.

Byars, Caspar R., cont.-surgeon, returned to duty at Jefferson Barracks, Mo., from leave of absence.

Felts, Robert L., cont.-surgeon, returned to Fort Sam Houston, Tex., from temporary duty at Camp Mabry, Austin, Tex.

McCown, Thomas B., cont.-surgeon, arrived at San Francisco from Philippine service and ordered to Fort Mott, N. J., for duty.

Warwick, Clarence A., cont.-surgeon, relieved from duty at Fort Mott, N. J., and ordered to his home, Keokuk, Iowa, for annulment of contract; granted leave of absence for one month.

Johnson, Charles W., cont.-surgeon, relieved from duty in the Philippines Division and ordered to San Francisco for further orders.

Ware, William H., dental-surgeon, left Fort Huachuca, Ariz., and arrived at Fort Logan, Colo., for duty.

Brown, Ira C., cont.-surgeon, granted sick leave of absence for two months, at expiration of which ordered to Fort McIntosh, Tex., for duty.

Kennedy, James S., cont. surgeon, left Fort Omaha for temporary duty at Fort Benjamin Harrison, Ind.

Phelan, Henry du R., cont.-surgeon, ordered to Fort Rosecrans, Cal., for duty.

Smith, Rodney D., cont.-surgeon, granted leave of absence for two months.

Slater, Ernest F., cont.-surgeon, returned from temporary duty at Fort Adams, R. I., to his proper station, Fort Hancock, N. J.

Navy Changes.

Changes in the Medical Corps, U. S. Navy, for the week ending July 21, 1906:

Moore, J. M., surgeon, commissioned surgeon, with rank of lieutenant commander, from Jan. 1, 1905.

Urie, J. F., surgeon, detached from the *Pennsylvania*, ordered home, and granted sick leave for three months.

Steele, J. M., medical inspector, detached from the Naval Academy and ordered home to wait orders.

Wright, B. L., surgeon, commissioned surgeon, with rank of lieutenant commander, from May 10, 1906.

Backus, J. W., P. A. surgeon, commissioned P. A. surgeon, with rank of lieutenant, from May 4, 1905.

Riggs, R. E., P. A. surgeon, commissioned surgeon, with rank of lieutenant, from Jan. 19, 1906.

Geiger, A. J., P. A. surgeon, commissioned P. A. surgeon, with rank of lieutenant, from May 6, 1906.

Public Health and Marine-Hospital Service.

List of changes of station and duties of commissioned and non-commissioned officers of the Public Health and Marine-Hospital Service for the seven days ending July 25, 1906:

Pettus, W. J., asst.-surgeon-general, reassigned to duty in the bureau, Washington, D. C., from July 16, 1906.

White, J. H., surgeon, directed to visit Mississippi River quarantine station for special temporary duty, on completion of which to rejoin station.

Woodward, R. M., surgeon, reassigned to duty at Boston, Mass., from July 16, 1906.

Nydegger, J. A., P. A. surgeon, department letter of June 5, 1906, granting leave of absence for three months from Aug. 11, 1906, amended to read three months from Aug. 10, 1906.

White, M. J. F., surgeon, granted extension of leave of absence for one month from Sept. 15, 1906.

Lloyd, B. J., P. A. surgeon, granted leave of absence on account of sickness for one month and ten days from June 11, 1906.

Steger, E. M., asst.-surgeon, leave of absence granted for one month and twenty-three days from May 17, 1906, amended so as to be for one month and eleven days only.

Salmon, T. W., asst.-surgeon, granted leave of absence for one month from July 28, 1906.

Delgado, M., acting asst.-surgeon, granted leave of absence for thirty days from June 9, 1906, on account of sickness.

Foster, S. B., acting asst.-surgeon, granted leave of absence for seven days from July 22, 1906.

Gleason, C. M., acting asst.-surgeon, granted leave of absence for fifteen days from Aug. 1, 1906.

Hamilton, H. J., acting asst.-surgeon, granted extension of leave of absence for one day, June 15, 1906.

Seavey, L. T., acting asst.-surgeon, granted leave of absence for twenty two days from Aug. 8, 1906.

Torres, J. F., acting asst.-surgeon, granted leave of absence for fifteen days from July 20, 1906.

Watson, H. J., acting asst.-surgeon, granted leave of absence for thirty days from Aug. 15, 1906.

Macdowell, W. F., pharmacist, granted leave of absence for thirty days from Aug. 6, 1906.

Brown, F. L., pharmacist, relieved from duty at Baltimore, Md., and directed to proceed to Boston for duty and assignment to quarters.

LaGrange, J. V., pharmacist, granted leave of absence for thirty days from Aug. 16, 1906.

Allen, G. C., pharmacist, granted leave of absence for seven days from July 11, 1906, under paragraph 210 of the Regulations.

Van Ness, G. I., Jr., pharmacist, relieved from temporary duty at the purveying depot, Washington, D. C., and directed to proceed to Fort Stanton, N. M., for duty and assignment to quarters.

Sterns, C. O., pharmac'st, relieved from duty in Boston, Mass., and directed to proceed to Baltimore for duty and assignment to quarters.

Health Reports.

The following cases of smallpox, yellow fever, cholera and plague have been reported to the surgeon-general, Public Health and Marine-Hospital Service, during the week ended July 27, 1906:

SMALLPOX—UNITED STATES.

Florida: Columbia County, July 14-21, 1 case; Nassau County, July 14-21, 1 case; Jacksonville, July 14-21, 4 cases.
Georgia: Augusta, July 16-23, 3 cases.
Illinois: Galesburg, July 14-21, 3 cases.
Louisiana: New Orleans, July 14-21, 10 cases.
Oregon: General, June 1-30, 21 cases.
Tennessee: Knoxville, July 14-21, 5 cases; Memphis, July 14-21, 1 case.
Utah: General, June 1-30, 50 cases.
Washington: General, May 1-31, 61 cases; June 1-30, 73 cases.

SMALLPOX—FOREIGN.

Africa: Cape Town, June 2-16, 1 case.
Brazil: Rio de Janeiro, June 10-17, 1 case.
Canada: Toronto, July 7-14, 1 case; Winnipeg, July 7-14, 1 case.
China: Hongkong, May 19-June 9, 11 cases, 8 deaths; Shanghai, June 9, present.
France: Marseilles, June 1-30, 1 death; Paris, June 23-30, 5 cases.
Great Britain: Bristol, June 30-July 7, 1 case; Hull, July 7-14, 1 case, 1 death.
India: Bombay, June 19-26, 1 death; Calcutta, June 9-16, 23 deaths; Karachi, June 1-24, 5 cases, 1 death; Rangoon, June 9-16, 5 cases.
Italy: General, June 21-July 5, 38 cases.
Japan: Kobe, June 9-16, 1 case.
Russia: Moscow, June 16-30, 9 cases, 2 deaths; Odessa, June 10-17, 5 cases, 3 deaths; St. Petersburg, June 18-30, 11 cases, 3 deaths.
Spain: Barcelona, June 20-July 10, 12 deaths; Seville, June 1-30, 26 deaths.

YELLOW FEVER.

Honduras: Celba, July 23, death present; Pimienta, July 5, 1 case.
Mexico: Vera Cruz, July 24, 1 case (imported from Yucatan).

CHOLERA.

India: Bombay, June 19-26, 39 deaths; Calcutta, June 9-16, 28 deaths; Rangoon, June 9-16, 1 death.

PLAGUE.

China: Hongkong, May 19-June 9, 240 cases, 236 deaths.
Egypt: Alexandria, June 30-July 5, 4 cases, 3 deaths; Guerga Province, July 1, 9 cases, 8 deaths; Port Said, July 2, 1 case, 1 death.
India: General, June 2-9, 3,597 cases, 3,446 deaths; Bombay, June 19-26, 47 deaths; Calcutta, June 9-16, 38 deaths; Karachi, June 18-24, 39 cases, 34 deaths.

Miscellany

To Writers of Scientific Papers.—The *Deutsche med. Wochft.* remarks in a recent issue that many articles sent in for publication of late have been full of mistakes, especially noticeable in dictated typewritten copy. It adds that the editorial staff can not be expected to rewrite the article to correct the numerous errors, and the composing room can not stand the expense of having the corrections made on the proofs. Consequently in future such MS will be returned to their authors for correction, or the expense of having the corrections made by the journal will be charged to the authors. A charge will also be made for extensive alterations in the text when the proof is sent to the author for correction. The *British Medical Journal* quotes this manifesto with approval, saying "it would save much loss of time and needless expense and vexation of spirit to all concerned if authors who confer on us the privilege of publishing their writings would in the first instance send them clothed and in their right mind, instead of swarming with misspellings of names, wrongly numbered illustrations, spaces for dates and figures left blank—as frequently happens, to say nothing of mere repetitions and contradictions, obscurity, etc".

Affairs in Panama.—There are many things of medical interest going on at Panama at the present time, the chief center of activity being the Ancon Hospital with its twenty physicians and its five hundred beds, writes Dr. H. E. Wetherill in *Medical Notes and Queries*. The deaths from pneumonia, which is of the sthenic type, but comes on insidiously, are as many as from malaria, and it would seem that the segregation of the pneumonics would be a useful procedure. How many

cases of yellow fever go unreported in Panama is not known. Beriberi is affecting many of the negroes. The junior doctors here are much underpaid; in fact, they receive but little more than the nurses in the wards and have additional expenses, as that of washing. They are not allowed to practice outside of the hospital, which naturally interferes with their becoming thoroughly acquainted with tropical conditions. There is a charge of about 150 pesos for the privilege of practicing in the zone. A medical society has been started and there is promise of new material for discussion. One of the most active workers is Darling, the pathologist, who has recently recovered from an attack of appendicitis. He has discovered a new form of coccidium differing from the Leishmann-Donovan bodies and has invented a new form of syringe fc the removal of pericardial fluid. I have found what is probably the lowest hemoglobin percentage on record, it being under 5 per cent. The leucocytic ring of Talqvist seems to be wider with the decrease of hemoglobin and it is no uncommon thing to find 15 per cent. of hemoglobin in the negro laborers. It seems that something might be done to reject all those applying for work, having a hemoglobin count under 50 per cent.; this would probably save the government considerable expense in the long run. Malaria germs have been thrown down in abundance in black-water fever with the torkrit. The tertian parasite is the most common. Trypanosomiasis of ruminants has been found. Uncinariasis, tricocephalus and bilharzia are common—the latter the least common.

Benjamin Franklin's Views as to the Nature of Colds.—The following passage from President Eliot's address on "Benjamin Franklin, as Printer and Philosopher", at the meeting of the American Philosophical Society, April 20, 1906, to commemorate the two hundredth anniversary of the birth of Franklin, is of decided medical interest: "The sagacity of Franklin's scientific inquiries is well established by his notes on colds and their causes. He maintains that influenzas usually classed as colds do not arise, as a rule, from either cold or dampness. He points out that savages and sailors, who are often wet, do not catch cold, and that the disease called a cold is not taken by swimming. He maintained that people who live in the forest, in open barns or with open windows, do not catch cold, and that the disease called a cold is generally caused by impure air, lack of exercise or overeating. He came to the conclusion that influenzas and colds are contagious—a doctrine which, a century and a half later, was proved, through the advance of bacteriologic science, to be sound. The following sentence exhibits remarkable insight, considering the state of medical art at that time: 'I have long been satisfied from observation, that besides the general colds now termed influenzas (which may possibly spread by contagion as well as by a particular quality of air), people often catch cold from one another when shut up together in close rooms and coaches, and when sitting near and conversing so as to breathe each other's transpirations; the disorder being in a certain state.' In the light of present knowledge what a cautious and exact statement!"

Early Contagion of Scarlet Fever.—The *Semaine Médicale* for June 6 reviews a recent article by Boisson which presents evidence to prove that scarlet fever is spread by the secretions in the mouth and throat. His study of a recent epidemic at the Military Medical College at Lyons sustains this view. Fifteen of the pupils were affected, and in 9 the mode of contagion was positively determined. It was traced in 6 to direct intercourse with a scarlet fever patient during the period of invasion, in 2 to one in the eruptive stage, and in only a single instance to a convalescent. He has also observed a case in which a child developed symptoms four days after associating with a scarlet fever child. Three or four days later the father and mother both developed the disease, although they had not been in contact with the primary case. He has become convinced that the sore throat is the specific manifestation and the eruption merely accessory. When contagion occurs from the exfoliated epithelium it is only because the scaly particles are contaminated with the products of the secretions of the nose and throat. Prophylaxis should include disinfection of the mouth and throat. He recommends gargling with a 1 per 1,000 solution of potassium permanganate or a weak solution of iodin.

Ovarian Inflammation in Mumps.—I. V. Troitzky reported in 1901 (as mentioned in these columns at the time, page 1478 of vol. xxxviii) that he had observed ovaritis in 13 out of 33 cases of epidemic mumps in a girls' boarding school. The children were between 9 and 15, and 8 of those affected with ovaritis were already menstruating. When the parotitis was unilateral the ovary on that side was the one affected, and both ovaries were tender when the process was bilateral. He has never found this secondary inflammation in the genital organs of boys so pronounced as in girls, and he advises to keep the child in bed, with local cold applications. He is inclined to regard the parotitis inflammation in and around the ovaries as a serious complication, liable to cause sterility later. His experience since then has confirmed him in this view, as he related in a communication (*Vrach. Gaz.*) to the recent International Medical Congress, stating that if no other cause for sterility can be discovered the possibility of damage of the ovaries from an old parotitic process might be considered.

State Boards of Registration

COMING EXAMINATIONS.

NEVADA State Board of Medical Examiners, Carson City, August 6. Secretary, S. L. Lee, Carson City.

NEBRASKA State Board of Health, State House, Lincoln, August 8-9. Secretary, Geo. H. Brash, Beatrice.

MISSOURI State Board of Health, St. Louis, August 8-9. Secretary, J. A. B. Adcock, Warrensburg.

CALIFORNIA State Board of Medical Examiners, San Francisco, August 21. Secretary, Chas. L. Tisdale, San Francisco. (Applications must be in August 4.)

Delaware June Report.—Dr. J. H. Wilson, secretary of the Examining Board representing president and fellows of Medical Society of Delaware, reports the written examination held at Dover, June 19-21, 1906. The number of subjects examined in was 12; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 6, of whom 5 passed and 1 failed. The following colleges were represented:

PASSED. College.	Year Grad.	Per Cent.
Baltimore Med. Coll.	(1906)	76.5
Jefferson Med. Coll.	(1906)	83.6, 89.3
Medico-Chirurgical Coll., Phila.	(1905) 83.3 (1906)	84.3
FAILED.		
Baltimore Med. Coll.	(1903)	69.2

North Dakota July Report.—Dr. H. M. Wheeler, secretary of the North Dakota Medical Examining Board, reports the written examination held at Grand Forks, July 3-5, 1906. The number of subjects examined in was 14; percentage required to pass, 75. The total number of candidates examined was 16, of whom 12 passed and 4 failed. Five reciprocal licenses were granted. The following colleges were represented:

PASSED. College.	Year Grad.	Per Cent.
College of P. & S., Chicago	(1904)	79.
Keokuk Med. Coll.	(1898)	80.
University of Maryland	(1878)	81.
Detroit Coll. of Med.	(1905)	80.
Hamline University	(1906)	84.
University of Minnesota	(1905) 82.; (1906)	82.
Western Reserve University	(1896)	75.
University of Toronto	(1905) 84., 85.; (1906)	80., 89.
RECIPROCAL LICENSES.		
Denver and Gross Coll. of Med., by reciprocity with Wyoming (1905).		
College of P. & S., Chicago, by reciprocity with Illinois (1905).		
University of Iowa, by reciprocity with Iowa (1905), two.		
Detroit College of Med., by reciprocity with Illinois (1901).		
FAILED.		
National Medical University	(1905)*	
Milwaukee Med. Coll.	(1903)*	
University of Toronto	(1906)*	

Data for one candidate was mislaid. The candidate fell below 65, in two subjects.

* Percentage less than 75.

The following questions were asked:

MEDICAL JURISPRUDENCE.

1. (*a*) Give six commonly known signs of death. (*b*) Is it possible to determine to an absolute certainty, without postmortem,

whether or not death has in fact occurred, and, if so, how? 2. In matters of civil rights, what is considered a live birth by our laws and what manifestations of life would establish it medicolegally? 3. Give the usual motives which in a general way underlie malingering, and state what general observations would assist you in differentiating between the feigned and the real condition of a suspect. 4. Give a practical and reliable test of human blood stains and state the difference in color of blood of one dying from strangulation from that of one dying from suffocation by illuminating gas, and explain the cause of this difference. 5. Fully describe the symptoms of poisoning by each of the following: Belladonna or its active principle, bichlorid mercury and chronic lead poisoning, and the condition found in bodies after death from each of these poisons.

HISTOLOGY.

1. Give the histology of the spleen. 2. Give the histology of the heart. 3. Give the histology of the epithelia of the kidney, ureter, bladder and urethra. 4. Give the histology of the spinal column. 5. Give the histology of the skin.

PATHOLOGY.

1. What do you mean, medically, by a pathologic condition? 2. What are some of the cardinal indications of inflammation? 3. Give the pathology in cases of death from acute alcoholism. 4. What is the pathology of irritability of the bladder? 5. What is the pathology of hemophilia? 6. How many pathologic varieties are recognized in appendicitis? 7. What pathologic conditions occur in scurvy? 8. (*a*) Describe a process of granulation. (*b*) Define a slough. 9. What are cysts, how formed? Give the varieties of cysts. 10. In diabetes, what pathologic changes occur in the pancreas and liver?

PRACTICE.

1. What is chlorosis? Pathology, etiology, symptoms, diagnosis, prognosis and treatment. 2. Describe Hodgkin's disease and how differentiate between it and green sickness; prognosis and treatment. 3. Definition and nature of exophthalmic goiter; etiology, general symptoms, prognosis, treatment. 4. What is an aneurism? Causes. What can be done for them? 5. Define hematuria; etiology, diagnosis, prognosis, treatment. 6. What is pyuria? Etiology, diagnosis. 7. What is tetanus and how differentiate between it and strychnin poisoning? 8. Tell what you know about anthrax modes of infection. 9. How would you handle an incipient case of tuberculosis? 10. What would be your treatment of an uncomplicated case of parotitis? Name some of the complications and sequelæ.

DISEASES OF WOMEN AND CHILDREN.

1. Differentiate between salpingitis and extrauterine pregnancy. 2. Give some of the immediate and remote results of gonorrhea in women. 3. Describe your method of repairing a lacerated perineum. 4. Give causes of pathologic uterine hemorrhage. 5. Differentiate between a fibroid tumor and pregnancy. 6. Give treatment of dilatation of urethra in female. 7. Differentiate between measles, rothein and scarlet fever. 8. Describe whooping-cough and give treatment. 9. Give incubation period of scarlet fever, measles, diphtheria and smallpox. 10. Write prescription for acute diarrhea in child 5 years old.

PREVENTIVE MEDICINE.

1. What is the difference between a contagious and an infectious disease? 2. Define the words (*a*) disinfectant, (*b*) antiseptic, (*c*) endemic, (*d*) epidemic. 3. Describe your care of a typhoid case to prevent infection of others. 4. What are the incubation periods of (*a*) smallpox, (*b*) diphtheria, (*c*) measles, (*d*) varicella? 5. Which is the best drinking water for constant use: distilled water, artesian water or water from a shallow well?

ANATOMY.

1. Locate and describe the brachial plexus, naming its branches. 2. Describe the wrist joint. 3. Describe the hip joint and name the ligaments. 4. Give the coverings of an oblique inguinal hernia. 5. What structures are divided in an amputation of the leg at the junction of the upper and middle thirds?

PHYSIOLOGY.

1. Give the function of the lungs and describe the various processes. 2. What changes does starch go through before being absorbed? 3. Describe the different kinds of muscular tissue and mode of action of each. 4. What is the cause of the first and second heart sounds? 5. Locate the centers of hearing, seeing and smelling. 6. How is animal heat produced, preserved and dissipated?

CHEMISTRY AND TOXICOLOGY.

1. What is meant by the term atomic weight? 2. What is specific gravity? 3. Define the terms acid, base and salt as used in chemistry. Illustrate. 4. Give in detail the quantitative test for urea, albumin and sugar in urine. 5. Give the test for indican in urine. What does the presence of a large amount usually indicate? 6. Give symptoms and treatment for poisoning by arsenic, bichlorid of mercury and carbolic acid. 7. Mention four common vegetable poisons. Give treatment for poisoning by the same.

MATERIA MEDICA.

1. Give composition and indications for use of (*a*) Blaud's mass, (*b*) Fowler's solution, (*c*) Dover's powder. 2. With what is ammonia carbonate incompatible? Give its dose. 3. Write a prescription for chronic constipation. 4. Write a prescription for pertussis in a child of 18 months. 5. Give the dosage and indications for the use of codein.

SURGERY.

1. How would you make a diagnosis between scrotal hernia, hydrocele and varicocele? 2. How would you treat a penetrating wound of the abdomen? 3. Give diagnosis and treatment for propneumothorax. 4. Give symptoms and treatment for depressed fracture of the skull. 5. Give the usual dislocations of the shoulder and manner of reductions.

EYE AND EAR.

1. Causes, symptoms and treatment of ophthalmia neonatorum. 2. Causes, symptoms and treatment of iritis. 3. Causes, symptoms and treatment of glaucoma. 4. Treatment of blepharitis marginalis. 5. Treatment of acute otitis media. 6. Symptoms and treatment of acute mastoiditis. 7. How do you remove foreign bodies from the ear? 8. How relieve pain in furunculosis of auditory canal?

OBSTETRICS.

1. Describe the mechanism of a case of normal labor. 2. Give the cause of miscarriage and describe the treatment in (*a*) threatened, (*b*) inevitable. 3. Mention four of the principal diseased conditions that may accompany pregnancy, and indicate briefly the treatment of each. 4. Give causes, diagnosis, prognosis and treatment of puerperal eclampsia. 5. Give method of procedure in a transverse presentation.

NERVOUS DISEASES.

1. Give causes, symptoms and treatment of facial paralysis. 2. How would you treat chorea and what complication would you look for? 3. What is meant by reflexes? Name and describe some of them. 4. What is infantile paralysis and how would you make your diagnosis? 5. Give symptoms and diagnosis of tubercular meningitis.

Society Proceedings

COMING MEETINGS.

American Orthopedic Association, Toronto, Canada, Aug. 20-21.
British Medical Association, Toronto, Canada, Aug. 21-25.
American Roentgen Ray Society, Niagara Falls, Aug. 29-31.
Am. Acad. of Ophthal. and Otol., St. Clair, Mich., Aug. 30-Sept. 1.
Medical Soc. of the Missouri Valley, Council Bluffs, Iowa, Sept. 6-7.
Med. Soc. of the State of Pennsylvania, Bedford Springs, Sept. 11-13.
Washington State Medical Association, Spokane, Sept. 11-13.
Assn. of Military Surgeons of the U. S., Buffalo, N. Y., Sept. 11-14.
American Electro-Therapeutic Association, Philadelphia, Sept. 18-20.
Am. Assn. of Obstetricians and Gynecol., Cincinnati, O., Sept. 20-22.

AMERICAN ACADEMY OF MEDICINE.

Thirty-first Annual Meeting, held in Boston, June 2 and 4, 1906.

(*Concluded from page 302.*)

Sanitary Regulation of the School Room with Reference to Vision.

DR. CASEY A. WOOD, of Chicago, said that were the ocular apparatus of the average child by nature adapted to the amount and kind of work he is ordinarily called on to do, the consideration of school hygiene would be unnecessary. Continual agitation of the importance of illumination in school rooms has led to the demand in Chicago for better built and better lighted school houses. Where artificial light is unavoidable, the light should resemble as nearly as possible diffuse sunlight, and should shine on the work to be done rather than into the eye of the pupil. While electric light is preferable to gas or kerosene, it is capable of greater harm to the vision and much more likely to produce eyestrain unless judiciously arranged. In the tinting of the walls each school room should be considered by itself; for example, if a room be situated above the ground floor, with a southern exposure, and facing a large space, and particularly with no obstructing building, the color may be light green, dull gray, or deep orange, relieved by lighter ceiling tint of the same color mixture. For the reverse condition a light buff or dull white was suggested.

The size of the letters, style of type, width of printed columns, spacing of words and lines, the color and texture of the paper of books are important factors in the prevention of eyestrain. The use of dull white paper printed with jet black ink, and the substitution of copying pads were advised. The necessity of the pen strokes being thick enough to read without eyestrain was emphasized. In the size of the school room, 25x30 feet was regarded as a probable maximum ground measurement. Allport's methods in the detection of diseased eyes and ears were considered of the most practical value. Dr. Wood favored the single, adjustable school desk, with sliding top. The desk should be adjusted at the beginning and in the middle of each school year. Recitations should not, for the first year, exceed ten minutes in length; the second year, fifteen minutes, which should be gradually increased to the maximum of forty-five minutes in the highest grade. Out of school hours the child under ten years of age should not read or study, but be given constructive manual work, with exercise

out of doors. The rules of ocular sanitation are almost, without exception, in accord with other rules of personal hygiene, which is evidence of the dimly recognized truism that opthalmology is not an art or a science apart, but merely one chapter of the whole philosophy of healing.

Training of the Mentally and Morally Defective Child.

DR. M. P. E. GROSZMAN, of New Jersey, distinguished sharply between the lower grades of mental and moral defectiveness, such as would demand life-long segregation, and that class of children whose defects are less grave in character, and who are, therefore, trainable. Attention was called to defects in the sense organs, nasal troubles, catarrhs, digestive disturbances, adenoid vegetations as frequent sources of mental and moral derangement. A fundamental requirement in the training of defective children in a systematic physical régimen adjusted minutely to the individual case. The secret of training the mentally and morally defective consists merely in understanding the causes and conditions of the individual defects and trying to develop the child within his own limits, stimulating the weak powers for good and crowding out the lower impulses; in other words, a process of elimination and substitution and of concentrating the child's attention on higher motives.

Advantages or Disadvantages of Coeducation After the Age of Twelve Years.

DR. G. STANLEY HALL, of Clark University, suggested the disadvantages of coeducation after the age of 12; first, by the fact that it violates a custom so universal that it seems to express a fundamental human instinct. In all ages of history and in all stages of civilization, with few exceptions, the dawn of puberty is marked by segregation of the sexes, especially for every purpose that can be called educational. In the second place, the arguments against coeducation from custom are re-enforced by many more or less systematic observations of children themselves. In the family the age of 12 finds boys and girls more or less segregated. Sex distinctions should be pushed to their utmost at this age, the feminization of the American school should be checked. Finally, it was pointed out that in the biologic world the female is the agent of selection. She divines, discriminates, and the male acts, does and learns by doing. Here gonochorism or human dimorphism culminates and boys can best be educated by motor methods which, while they are in some respects also a boon to girls, are now opening up for boys a scope, range and power which are but just beginning to be seen. This is the education of the future, and just in proportion as ways are found and made to bring out all its resources, the more distinct will be the matter, methods and ideals of training for the two sexes. While the two circles representing the psychic life of each will always overlap and have some common area, that peculiar to each should and now seems sure for a time to increase.

DR. WILLIAM T. SMITH, of Dartmouth College, said that the most obvious advantage of coeducation is economy. Another advantage mentioned is that the boys, being in possession of the educational treasures and traditions of the past, the best could not be secured by the girls at present, unless shared with them. The danger to the health of the girls in coeducation is greatly exaggerated. With proper care they more frequently improve in health. In the bearing of coeducation on the mental needs of girls, the girls average better work in the regular college curricula than the boys. The disciplinary course which is good for boys is equally adapted to the girls. Concerning coeducation in its effect on character development, women exert a refining influence on men and association with men in study gives a steadiness and continuity to the work of the women. Nature had ordained that with sex should go a separateness in daily activities. This obtains in business, in scientific, or literary, or civic work, and in the industries. The exceptions to this separateness are the family relations and those social activities whose impulse lies in sex consciousness. Daily competitive association of the sexes in college is not strictly "natural." That college spirit which is a potent factor in the development of young men and women is possible for either in its highest form only in separate colleges.

Dangerous Influences of Overtaxing the Girl's Mind, Particularly at Puberty.

DR. A. P. CLARKE, of Cambridge, mentioned as a potential influence in the overtaxing of the girl's mind her greater conscientiousness in her acquisition of knowledge than that of the boy. He advised against the forcing of girls of mediocre powers in work for which they have no special desire. The conventionalities of society might also react unfavorably. The offering of prizes is not without danger to the young girl. The hope was entertained that by the influences of better hygiene, the selection of plainer diet, by the help of gynecic medical science, the avoidance of unnecessary social demands, the dangerous influences encountered at the age of puberty may be counteracted.

DR. L. DUNCAN BULKLEY, of New York, stated that the human frame is but a machine, marvelous in its powers of self sustaining and self reproduction. Though infancy and childhood are well guarded, the age of puberty has not been seriously enough considered and guarded. From physiological reasons it would be expected that overtaxing the girl's mind at this time would naturally result in serious consequences. Clinical experience abundantly confirms this. He has seen many girls, often with trivial skin affections, who on close study were found to be in a lamentable state of ill health, all dating from mental or nervous overstrain in schools or colleges. He believes that many with unusual powers of health, or with most careful regulation of the whole manner of life, and with wise direction of the mental strain, can attain high educational conditions, but that far more suffer in their physical state and are permanently harmed than is commonly supposed. A great responsibility rests on the family physician and specialists who chance to see these patients, in early recognizing and properly treating the departures from perfect health which continually occur in girls being educated, and in giving repeated warning regarding the many elements causing derangement to health. Of these he instanced study too soon before or after meals, or before bedtime; insufficient or irregular hours of sleep; erroneous eating and drinking; eating between meals, etc. About the time of menstruation there should be less mental and physical exercise, and more rest.

DR. EDWARD COWLES, of Waverly, said that much of the overtaxing was due to the failure of the home and school to coöperate. The solution of the problems would be more certainly attained by keeping in mind the fact that the reproductive processes as a whole and in all their contributing parts are essentially physiological. A physiological process can not of itself be regarded as a cause of disease. Interference with such processes may result in symptoms called pathological. On the mental side one of the notable dangers arises when the young girl is ignorant of the menstrual disorders. Careful and timely instruction should be imparted concerning the menstrual function. He emphasized the importance of the intelligent care of young girls, and of teaching them that there should be a healthy exercise of mind and body for the maintenance of good health, and of warning them of the dangers resulting from overtaxing the mind as well as the body.

Officers Elected.

The following officers were elected for the ensuing year: President, Dr. Casey A. Wood, Chicago; vice-presidents, Dr. Wm. L. Estes, South Bethlehem, Pa.; Dr. James A. Spalding, Portland, Me.; Dr. Woods Hutchinson, Redlands, Calif.; Dr. Guy Hinsdale, Hot Springs, Va.; secretary, Dr. Charles McIntyre, Easton, Pa.; assistant secretary, Dr. Alex. R. Craig.

PHILADELPHIA COUNTY MEDICAL SOCIETY.

Regular Meeting, held June 27, 1906.

The President, DR. CHARLES K. MILLS, in the Chair.

Medical Aspect of the Smoke Problem.

DR. J. MADISON TAYLOR set forth the paramount importance of pure air for all to breathe, especially those who live in cities and large towns. All who are ill are made more susceptible to complications and their recuperative powers are

impaired by a vitiated atmosphere. There is no reason why city dwellers should have such bad air as they get, except for the ruthless, contemptuous arrogance of corporations, railroads and large manufactories. Laws are made to regulate this; the cost of smoke combustion is little enough, yet there is a widespread disregard of these laws. They should be enforced. Physicians fail to discharge their duties unless they maintain a continuous propaganda, teach the people who should vote to enforce all enactments to limit nuisances. The housetop is a growing means of comfort and health and it is unfit to be so used so long as bituminous coal is used carelessly.

The Smoke Problem and Public Health.

DR. W. M. L. COPLIN stated that the control of the smoke nuisance rests with the department of boiler inspection, representatives of which claim that with proper stoking the pollution of the air by the smoke can be reduced to a minimum. Regarding the influence of the smoke on public health, the statistics are confusing and incomplete. Much experimental work has been done concerning the influence of the smoke on pulmonary structures, with the widest variations in deductions. By some it has been maintained that carbonaceous material in the lung is absolutely without influence on the pulmonary tissues, and by others that it had an immunizing effect to the infection by the tubercle bacillus. Other views have been diametrically opposed to these. One of the difficulties encountered in connection with the smoke nuisance is the deposit of relatively large amounts carrying with them organic materials, which would readily be disposed of under ordinary conditions. In the Philadelphia Hospital the deposit of soot was said to be far in excess of that of any previous year, due to the increased traffic, and to the use of soft coal in the neighborhood. There has been, however, no increase of morbidity or mortality in the wards directly exposed to the smoke over that of the wards relatively free of the soot deposit.

The discouraging aspect and that which must be advanced with hesitancy, lest it be used as an argument against the abatement of the nuisance, Dr. Coplin said, is that there is little evidence to show that the presence of smoke in the air increases especially the morbidity or the mortality of a community. However, as physicians familiar with the functions of the respiratory organs, the profession must conclude that the inhalation of such dust in some degree does interfere with respiratory function. Microscopical examination of sections of lung tissue shows an enormous amount of foreign material which must interfere with the interchange of gases in the lungs.

Relation of a Smoke-Laden Atmosphere to Diseases of the Nose and Throat.

DR. C. J. GRAYSON believes that a long argument is not required to show that the nose and throat have very just cause for complaint against the smoke laden atmosphere of the city. Within a few months following the discovery of natural gas in Pittsburg it was said that the decrease of disease of the upper air passages was so great that nose and throat specialists were threatened with the loss of their livelihood.

Relation of Smoke-Laden Atmosphere to Diseases of the Eye.

DR. L. WEBSTER FOX noted the increased number of patients with external eye disease in the last three years and attributed this increase to the coal dust laden atmosphere caused by the substitution of soft coal for hard. During the last few years there have been recorded more cases of conjunctivitis and pink-eye than ever before in the history of the city. This is due to the gritty dust in the air, cutting the delicate conjunctiva and many times finding lodgment on the cornea, producing ulceration and making a culture spot for infective germs. He also spoke against the over sanding of the city railway tracks, loading of ash carts and the dry sweeping of the streets during business hours. The smoke evil, bad as it is, is a lesser evil than that resulting from the excessive distribution of sand along the trolley tracks. This, composed of minute particles of crystal, is ground to a powder and finds lodgment in the eye, nose and lungs. Inflammation results, leading to various conditions in the eye; to chronic catarrh; and to asthmatic conditions, or even to tuberculosis.

Practicability of Preventing the Smoke Nuisance.

DR. HENRY LEFFMANN referred to the investigation by mechanical engineers of the prevention of smoke from the burning of soft coal. The literature of fuel-engineering shows that there is no necessity for the emission of appreciable smoke from the stacks of stationary boilers. The appearance of such smoke is due to an oversensitive selfishness or a crass indifference and ignorance of modern progress. By oversensitive selfishness he meant a state of mind in which the desire for money-getting is so strong that the person became suspicious of every plan of improvement. The practicing chemist sees daily such a degree of indifference to the facts of science that he is prepared for evidence of crass ignorance in any field. The only way to enlighten such persons is to compel them by law to remedy the conditions. To prevent smoke from bituminous coal, regulation of the firing is necessary. The coal must be thrown on in small lots and allowed to coke at such a rate that the emitted hydrocarbons can be burned before they are dissociated with the separation of carbon. This slow firing, of course, necessitates either an increase in the number of firemen or the employment of machinery. The latter is preferable and entails little, if any, additional cost. Were the cost argument allowed to play, all sanitary and police regulation would end. The apparatus referred to is adapted to stationary boilers. For locomotives and boats much could be done by proper firing. A radical improvement was suggested by compulsory use of hard coal within city limits. The fuel value of escaping smoke is very small, and this is known to the fuel-user, who is, consequently, indifferent concerning this loss.

Therapeutics

[It is the aim of this department to aid the general practitioner by giving practical prescriptions and, in brief, methods of treatment for the diseases seen especially in every-day practice. Proper inquiries concerning general formulæ and outlines of treatment are answered in these columns.]

Gonorrhea.

In considering the treatment of gonorrhea, Sturgis and Cabot, in their "Manual of Venereal Diseases," state that of all the venereal diseases which require treatment, gonorrhea is the most uncertain and disagreeable. The treatment should consist in promoting the comfort of the patient, insuring the elimination of the gonococcus, and in avoiding complications. During the acute inflammatory stage, when the febrile symptoms are present, when the penis is hot, inflamed and edematous, and when the mucus membrane of the part is congested, associated with a mucopurulent discharge, the first object should be to relieve those symptoms. At this stage of the disease the injection is forbidden and will do harm if employed. To relieve the febrile symptoms the authors recommend aconite as follows:

℞ Tincturæ aconiti radicis.....m. i-ii |06-12

Sig.: To be taken at one dose in a little water.

The foregoing is to be repeated every hour for five or six doses.

To relieve the edema and swelling of the penis cold water dressings are recommended. A better method, perhaps, is to wrap the penis up in a solution made up as follows:

℞ Liq. plumbi subacetatis
Tincturæ opii, ää.....℥i 30
Aquæ, q. s. ad.....℥viii 240

Sig.: Apply locally on gauze.

With the institution of the foregoing treatment the severe symptoms will soon pass away. However, the desire to pass water frequently will still be present, due, not to an involvement of the neck of the bladder, but from reflex action due to involvement of the first inch of the urethra.

A very good suggestion is offered by the authors in instructing the patient to pass the urine while the penis is immersed under very warm water.

The diet at this stage must be of the lightest, such as milk and gruels, avoiding all stimulating foods and drinks. Injections are recommended at this time, using antiseptic preparations at first, and astringents during the decline of the disease.

As antiseptics, corrosive sublimate, a 1 to 10,000 solution, potassium permanganate, 1 to 5,000, silver nitrate, 1 to 6,000, are recommended as the most efficient during the early treatment of the disease. As the disease goes on to recovery and the gonococci grow less in number, the following combinations are of service:

℞ Zinci sulphatis ..... gr. viii-xii | .50-.75
Aquæ ..... ʒiv 120
Misce. Sig.: To be used as an injection twice daily.

Or,

℞ Zinci acetatis ..... gr. viii-xii | .50-.75
Aquæ ..... ʒiv 120
Misce. Sig.: To be used as an injection three times a day.

Alum, used alone, or in combination with tannin, has been advised in some cases. It may be combined as follows:

℞ Alum. sulphatis ..... gr. xx | 1.30
Aquæ ..... ʒiv 120
M. Sig.: As an injection three times a day.

Or,

℞ Alum. sulphatis
Acidi tannici pulv., ää ..... gr. x-xv | .65-1.00
Aquæ ..... ʒiv 120
M. Sig.: Shake well before using and inject three time a day.

The following combination is sometimes of value as an astringent:

℞ Zinci sulphatis ..... gr. viii | .50
Plumbi acetatis ..... gr. xv | 1
Tincturæ opii
Tincturæ catechu co., ää ..... ʒii | 8
Aquæ, q. s. ad ..... ʒiv 120
Misce. Sig.: As an injection three times a day.

In some cases, it may be deemed advisable to give some internal medication. For this purpose the authors advise copaiba, cubebs, or oil of sandalwood. The following combination may be used for this purpose:

℞ Copaibæ ..... ʒiii 12
Oleoresin cubebæ ..... ʒi 4
Magnesiæ, pulv., q. s
Misce. Ft. capsulæ No. lx. Sig.: From three to six capsules three times a day.

Whenever any of the foregoing preparations are given it is better that they be given in capsule on account of the nauseating taste. They should always be given after meals in order to avoid any disturbance of the stomach, and thus to lessen the tendency to nausea, and they should not be given continuously for any length of time, as they may produce pain in the region of the kidneys.

Of all the complications chordee is the one that will cause the most concern and will be the most difficult to relieve. The method which is the most effective and reliable is a hypodermic of morphin and atropin given by the physician from the following solution.

Atropinæ sulphatis ..... gr. i | .06
Aquæ distillatæ ..... ʒiv 15
Liq. morphinæ (1-30) q. s. ad ..... ʒi 30
Misce. Sig.: From five to eight minims, hypodermically, as necessary.

The foregoing may be given in the perineum or in the sides of the thighs at bedtime. Internally, preparations containing camphor, opium, and belladonna afford the best results, as follows:

℞ Pulv. camphoræ ..... gr. i | .06
Pulv. opii ..... gr. ii | .12
Ft. Capsule No. vi. Sig.: One at bedtime and another in two hours if desired.

Other combinations of copaiba may be found serviceable, used internally, as follows:

℞ Resinæ copaibæ ..... ʒiii 12
Spiritus etheris nitrosi ..... ʒv 20
Mucil. acaciæ ..... q. s.
Aquæ feniculi, q. s. ad ..... ʒviii 240
M. Sig.: One tablespoonful after each meal.

The mixtura copaibæ composita of the National Formulary (Lafayette mixture) is of value in some cases of gonorrhea after the acute stage has passed:

℞ Copaibæ
Tinct. lavendulæ co., ää ..... ʒii | 60
Liq. potassæ ..... ʒiv | 15
Spts. etheris nitrosi ..... ʒii | 60
Syrupi ..... ʒv | 150
Mucil. acaciæ, p. s. ad ..... Oi | 480
M. Sig.: To be well shaken, a tablespoonful after meals, in water.

Aërophagia.

The presence of air in the gastrointestinal tract, according to Billings and Salisbury in the Practical Medical Series, depends on either the production of gas by means of fermentation or the entrance of air from without. In the case of the stomach, contrary to the general opinion, the air enters from without and not from fermentation. In other words, it is swallowed gas. This condition is frequently observed in hysterical individuals. In such cases reliance should be placed on moral means, as remedies which tend to prevent fermentation and the accumulation of gas, and attempts to regulate the diet are useless and may do harm by drawing the patient's attention to the malady. The best remedy in such cases, according to the authors, is sleep and rest, and if need be, the latter may be induced artificially. In non-hysterical cases Stern recommends the introduction of the stomach tube to aid in the expulsion of the air, followed by irrigation of the stomach with from six to eight liters of water, to which has been added chloroform water in proportion of one c.c. to the liter of water. In some cases a teaspoonful of the following may be given for a few days following the irrigation:

℞ Bismuthi salicylatis ..... ʒiiiss. | 14
Menthol ..... gr. xv | 1
Mucil. acaciæ, q. s. ad ..... ʒiii | 90
M. Sig.: One teaspoonful to be taken at one dose and repeated every three hours for one or two days.

In case the stomach tube is not used chloroform, turpentine or aromatic spirits of ammonia may be given by the mouth to assist in the expulsion of gas.

In accumulation of gas in the intestine an enema may be serviceable. In cases accompanied by severe pain, some preparation of opium may have to be resorted to. This may be given in the form of suppositories of opium and belladonna. Castor oil has been found to be of service in the experience of Stern in cases of tympany following aërophagia as follows:

℞ Olei ricini ..... ʒss | 15
Pulv. acaciæ ..... ʒii | 8
Spts. chloroformi ..... ʒiiss | 10
Codeinæ ..... gr. viii | .50
Tinct. vanillæ ..... ʒss | 2
Saccharinæ ..... gr. viiss | .48
Aquæ, q. s. ad ..... ʒiiiss | 105
M. Sig.: One teaspoonful every hour.

Hyperchlorhydria.

In the same periodical many authorities recommend, in cases of simple hyperchlorydria, the use of alkalies. The majority advise the use of bismuth and several suggest belladonna and atropin as valuable agents in relieving the condition. Bromida may be given in the morning and evening or after meals. For the alkaline effect, weak alkaline waters are recommended. The following combinations may be of value to counteract the excessive amount of hydrochloric acid:

℞ Sodii bicarb ..... ʒii | 8
Sodii salicylatis ..... gr. xxxv | 2.30
Sodii biboratis ..... gr. xxv | 2
Aquæ dist. ..... ʒxxx | 900
M. Sig.: One-quarter of this amount may be taken one hour after meals.

Or,

℞ Potassii iodidi ..... gr. lxxv | 5
Sodii bicarb ..... ʒiiss | 10
Aqua dist. ..... ʒvi | 180
M. Sig.: One tablespoonful every three hours.

Or,

℞ Magnesii oxidi
Bismuth subnit., ää ..... ʒii | 8
Ext. belladonnæ ..... gr. iv | .25
M. Ft. chart No. xxiv. Sig.: One powder after each meal three times a day for an adult.

Stockton recommends the following combination:

℞ Cerii oxalatis ..... ℥i 4
Bismuthi subcarb ..... ℥ii 8
Magnesii carb ..... ℥iv 15

M. Sig.: One-quarter to a whole teaspoonful in a third of a glass of water, two hours after each meal.

When constipation is present with drowsiness, torpor, headache and other evidences of disturbed digestion he recommends the following combination:

℞ Potassii bicarb ..... ℥ii 8
Sodii bicarb ..... ℥iv 15
Sodii et potass. tartratis ..... ℥i 30

M. Sig.: One teaspoonful dissolved in half a glass of water at 10 a. m., 4 p. m., and 9 p. m.

Medicolegal

Seeing Patients in One State and Sending Medicine from Another—No Vested Right.

The Supreme Court of Missouri, Division No. 2, says that the defendant in the case of State vs. Davis had a room at the hotel in Memphis, Scotland County, Mo., professed to be a physician, and held himself out as such. One Hoover applied to him at the hotel as a physician for treatment. He diagnosed his case in the usual and ordinary way of practicing physicians, and prescribed remedies. His prescription for medicine, however, was in the form of a blank, which was required to be sent to the state of Illinois, and then the defendant would send the bottles of medicine to Hoover by express from Warsaw, Ill. Hoover took the medicine according to the defendant's directions, and according to the directions on the bottle. He paid the defendant at the rate of $5 per month for such treatment. The payments were made to the defendant and the defendant would come to the hotel for the purpose of seeing his patient, Hoover, the first Monday in every month. This, in the court's opinion, was clearly practicing medicine in Missouri as contemplated by the statute. The mere fact that the medicine was sent from Illinois did not in any way alter the construction placed on his acts, that he was a practicing physician in Missouri.

The practice of medicine, as contemplated by the provisions of the statute covering that subject, the court says, may consist only of the examination of a patient, diagnosing the cause of the trouble complained of, or, by one professing to be a physician, seeing the patient at stated intervals, and the indication and prescribing of remedies to be applied, and the acceptance of pay for such services. The mere fact that the remedies indicated and prescribed are sent from another state does not negative the idea that the defendant was practicing medicine or attempting to practice medicine in Missouri. It would not be an uncommon occurrence for a regular practicing physician of Missouri to examine his patients, diagnose the cause of their illness, and then say to them, "The remedies I indicate and prescribe you must obtain from the state of New York." This is not a case where the physician does not come to the state and undertake to secure patients, but simply furnishes blanks, which are sent to him in another state, and he sends the medicine in accordance with the requests; but here we have a person coming to Missouri, holding himself out as a physician, has patients visit him, examines them, advises them as to the nature and cause of their trouble, indicates the remedies to be applied, and accepts pay for such services. The bare statement of the two classes of cases makes manifest the distinction between them. The proof in this cause was amply sufficient to show that the defendant was undertaking to practice his profession in Scotland County, Mo., and, it being conceded that he was not a regularly registered physician in Missouri, and had no license from the State Board of Health to practice medicine, the testimony fully warranted the conclusion reached by the jury in their verdict finding the defendant guilty as charged, of practicing medicine without a license.

Moreover, the court says that it was clearly manifest that the defendant had no vested right to practice medicine in Missouri by virtue of his former practice there in 1857. On returning to the state to practice his profession, his qualifications, fitness, and skill to do so must be judged by the law in force at the time he so returns, and before he will be authorized to engage in the practice of his profession and reap the rewards from such practice, there is no reason why he should not comply with the conditions imposed on him by the law in force at the time he so undertakes to engage in the practice.

It is but common knowledge that the people who have ill health or whose families are troubled with disease are more easily and can be more readily imposed on by persons who represent themselves as physicians, claiming that they can give them permanent relief, than any other class; and it may be added that intelligence is no protection from impositions along that line, for, when a man is sick or his family ill, whether he be intelligent or ignorant, they readily give an attentive ear to any sort of a doctor who claims that he can give them relief, and are at all times ready to purchase and swallow all sorts of nostrums because they are recommended by some one who claims to be a physician. The prime object of the Missouri law on the subject of the practice of medicine is the protection of the people from the impositions herein indicated by persons who are not sufficiently skilled in the profession to authorize them to properly administer medicine, and therefore relieve the afflicted. And, again, the court says that it is apparent that the general assembly of Missouri, in the enactment of the provisions of law regulating the practice of medicine and surgery in Missouri, intended to fix a standard of fitness, skill and qualification which would authorize the practice of that profession. This law does not undertake to deprive any person of a vested right, for there can be no such thing as a vested right in the practice of medicine. It does not undertake to suppress or prohibit the practice of medicine or surgery, nor to prohibit any particular person from practicing as a physician or surgeon, but it simply undertakes to require the necessary and essential qualifications for that purpose.

Affliction with Loathsome Disease Cannot Be Condoned.

The Court of Appeals of Kentucky says that the defendant in the divorce case of Hooe vs. Hooe admitted that at the time of his marriage he had a loathsome disease, but averred that he was unaware of it, and claimed a subsequent condonation by his wife. Thus was presented the question of whether or not his wife had condoned or could condone the offense of which he confessed he was guilty by living with him after knowledge on her part of the fact that he had a loathsome disease. The Kentucky statute declares that "cohabitation as man and wife after a knowledge of adultery or lewdness complained of shall take away the right of divorce therefor." But without determining the question whether or not condonation is limited to these two offenses, the court is disposed to place the opinion in this case on the higher and broader ground that the offense charged in this action is one that the wife cannot condone by cohabiting with her husband, so as to deny her the right to obtain from him a divorce for this cause. Either a husband or wife might be willing and anxious to condone a single act or a series of acts of gross misconduct or cruel treatment, or other specific violation of the marriage obligation; but the affliction of a loathsome disease does not come within this rule. It is a continuing offense—not a distinct or separate grievance that may be forgotten and forgiven in a day or a week, or a species of misconduct that affectionate treatment and gentle behavior might obliterate. There is reason and justice in the doctrine that the injured spouse may, by his or her voluntary acts, committed with a full knowledge of all the facts, condone a vice or crime. The drunkard may, and often does, reform and become a useful and honest citizen, a good husband, and a kind father. A man who commits a crime may repent of his wickedness and lead an upright and valuable life. The husband, who in a moment of inexcusable passion behaves in an unkind and cruel manner toward his wife, may not be guilty of a like offense, and in these and other instances that might be cited, where a reconciliation is effected and the condonation of the injured party is complete, nothing may again occur to disturb the happiness

of the home, or interfere with the felicity of the domestic relation, nor will children born of the marriage be afflicted in mind or body by the causes which once disrupted the marital state; but, when either one party or the other has contracted a loathsome disease that may be for all time menacing to the health, dangerous to the life, and distressing to the peace of mind and happiness of the parties, these reasons can have no application, and if, in an effort to avoid a threatened scandal, or prompted by a desire to attempt a reconciliation, or for other motives that the circumstances and surroundings may create, the wife should temporarily return to her husband, and make a fruitless endeavor to resume her duties and station as a wife and mother, she ought not to be thereafter denied the power of asserting her legal rights, if it becomes necessary to apply to the chancellor for redress or protection. It may have been declared to be the law in other jurisdictions that offenses such as this can be condoned, but it has never been so ruled in Kentucky. It was likely that the defendant, when he married, believed that he was well; but his innocence in this respect did not affect the question presented.

Current Medical Literature

AMERICAN.

Titles marked with an asterisk (*) are abstracted below.

Medical Record, New York.

July 21.

1 *Multiple Motor Neuritis, Including Landry's Paralysis and Lead Palsy. W. G. Spiller and W. T. Longcope, Philadelphia.
2 *Diet in Tuberculosis. H. M. King, Liberty, N. Y.
3 *Manifestations of Syphilis Associated with Pulmonary Tuberculosis. J. H. Pryor, Buffalo.
4 *Reflex Symptoms and Referred Pains Caused by Stone in the Kidney. S. S. Bradford, Montclair, N. J.
5 The Ophthalmoscope as an Aid to the General Practitioner. C. P. Franklin, Philadelphia.

1. **Multiple Motor Neuritis, Landry's Paralysis and Lead Palsy.**—Spiller and Longcope state that cases of rapidly developing paralysis of all four limbs are not common. They believe that many cases which are classed as Landry's paralysis are caused by neuritis. It is not justifiable, however, to assume this etiology for all. The writers do not discuss the subject of Landry's paralysis separately, but include it under the heading of multiple motor neuritis. They do not ignore the spinal form of this symptom-complex. They refer to the selective action of poisons for certain parts of the central or peripheral nervous system, and quote Arneth, who says: "We shall hardly err if we ascribe to the poison of Landry's paralysis an exclusive affinity for the central nervous system." The writers then review in detail three cases which might be classed as Landry's paralysis, but which they regard as atypical forms of multiple motor neuritis.

2. **Diet in Tuberculosis.**—King declares that disturbed metabolism is essential to the development of tuberculosis. If in all respects the cell is normally nourished it will be sufficiently resistant to the invasion of the tubercle bacillus. As a rule one is able to trace errors in nutrition antedating by months and often by years the probable period of infection in a given case. The diet question in the case of tuberculous invalids is more than one of calories. It can not be solved merely by arriving at theoretical standard amounts and relations of proteids, fats and carbohydrates. The tastes, habits and peculiarities of the patients and their heredity are important factors. Variety, preparation and the manner of serving foods are all important. Psychotherapy is more important in diet prescriptions, perhaps, than anywhere else. In the study of these cases the food requirements should be determined and met, if possible, and the dangerous error of overfeeding should be avoided.

3. **Syphilis Associated with Pulmonary Tuberculosis.**—Pryor, during the last two years has observed fifteen cases of syphilitic disease associated with pulmonary tuberculosis. He calls attention to a number of conclusions which he has drawn from his observations. Syphilis is a common disease, and physical debility combined with worry and mental distress which may accompany tuberculosis may arouse a latent syphilitic taint. The association of the two conditions may be disguised and the symptoms confused. In such cases the therapeutic test will often be required for the diagnosis of syphilis. Persistent fever above 99 F. in incipient tuberculosis, when the lesion is slight and when proper treatment does not secure improvement should be viewed with suspicion. Improvement in tuberculous cases following antisyphilitic treatment is most marked and at times surprising.

4. **Reflex Symptoms and Referred Pains Caused by Kidney Stone.**—Bradford gives the history of a patient whose principal symptoms were nervous exhaustion and pain and weakness of the lower extremities, movable right kidney, pyuria, retroversion of the uterus and defective circulation of the lower extremities. No improvement had resulted from change, travel, rest and various methods of treatment which she had undergone. The patient was a woman, 32 years old, a librarian. The family history was negative. The mental condition was excellent. A thorough examination was made in order to detect, if possible, evidences of organic trouble. It was found that while clear amber urine flowed from the right ureter, a thick whitish fluid came slowly from the left. An *x*-ray picture of the kidney confirmed the diagnosis of stone. Operation proved this diagnosis to be correct. The patient died on the third day after the operation. The writer suggests that the irritation in the kidneys or pancreas or both caused the so-called referred pain of head and brought about reflexly a spasm of the vasomotor nerves derived from the lumbar and upper sacral segments. This caused contraction of the blood vessels of the lower extremities. The ischemia in the nerve endings caused the deep-seated pain, and in the muscles the weakness.

New York Medical Journal.

July 21.

6 *Electrical Orientation in Spinal Anesthesia. J. L. Corning, New York.
7 *Tendon Transplantation and Grafting for Paralytic Deformities. S. L. McCurdy, Pittsburg.
8 *Is Neuralgia a Functional Disease? A. Gordon, Philadelphia.
9 Cancer of the Rectum. S. G. Gant, New York.
10 High Frequency Oscillating and High Periodicity Pulsating Currents in Medicine. R. Wilson, Montreal.
11 Early Diagnostic Signs of Tabes Dorsalis. C. S. Potts, Philadelphia.
12 Difficulties in Diagnosis of Cardiac Diseases, with Special Reference to Children in the Public Schools. N. Breiter, New York.
13 Morbid Processes in the Right Abdominal and Pelvic Regions of the Female, and their Distinction. J. A. Schmitt, New York.
14 Lumbar Puncture in Diagnosis and Therapeutics. P. W. Monroe, Springfield, Ill.

6. **Electrical Orientation in Spinal Anesthesia.**—In the method described, Corning makes use of the electrical excitation of the sensory filaments of the cauda equina, or of that of the sensory tract in the posterior columns of the spinal cord, as the means of determining the penetration of the membranes. He employs a slender hollow needle, five inches long, provided at the point of attachment of the syringe with an iron screw, by which means the end of an insulated conducting cord may be secured. The other end of this cord is attached to one of the poles from a faradic battery. A wire stylet for the hollow needle is also provided. The shaft of the needle is insulated throughout its entire extent, save only at the point, where about 1/32 of an inch is left bare. A coating of shellac of fine quality employed to achieve this insulation offers but insignificant hindrance to the introduction of the needle. The circuit is completed by placing a sponge on the abdomen, holding it in position by an elastic belt. The current must be strong enough to give rise to a considerable degree of frontal pain when the point of the needle is applied above the supraorbital nerve. Corning has employed the method successfully in two cases.

7. **Tendon Transplantation for Paralytic Deformities.**—McCurdy has not found it necessary to pass a wire through the foot and plaster-of-Paris to secure the tendons to the bones until union has taken place, as was advised by Sherman. He splits the periosteum and separates it from the bone, then tucks the ends of the tendon under this membrane, and thus

secures it with sutures. Three things are very essential, however: absolute asepsis, suturing the tendons under a moderate degree of tension and perfect retention of the member in the corrected position with plaster-of-Paris for from six to eight weeks.

8. **Is Neuralgia a Functional Disease?**—Gordon reports the results of a study based on the pathologic findings in eight cases of neuralgia. In the first four cases, occurring in three patients aged 65, 54 and 58 respectively, the blood vessels were uniformly thickened and presented a very narrow lumen. In the last four cases, occurring in patients aged 43, 34, 36 and 29 respectively, only a few blood vessels showed some thickening of their walls. The nerve bundles situated in the immediate vicinity of the altered blood vessels always showed a distinct degeneration. The degree of alteration of the blood vessels always was in proportion to the degree of nerve degeneration and the number of degenerated nerve bundles. The duration of the disease was found not to have any special bearing on the degree of involvement of the nerves. As the result of his findings Gordon concludes that the occurrence of degeneration of the peripheral nerve is frequent, if not constant, in neuralgia. This nerve degeneration is very probably a primary condition, which as a neuritis assumes an ascending course and involves secondarily the Gasserian ganglion. The blood vessels undoubtedly play a certain rôle in the causation of a degenerative state of the peripheral nerve. Gordon urges that it is highly important to remove surgically a nerve affected with so-called neuralgia as early as possible after a short trial of medical treatment is given.

The Boston Medical and Surgical Journal.

July 19.

15 Medical Department of the Japanese Army. C. Lynch, U.S.A.
16 *Therapeutics Based on Pathologic Physiology. R. C. Cabot, Boston.
17 *Use and Abuse of Pulmonary Gymnastics in Tuberculosis. E. O. Otis, Boston.
18 *Id. H. B. Dunham, Rutland, Vt.

16. **Therapeutics Based on Pathologic Physiology.**—Cabot claims that treatment based on pathologic physiology is not the best type of therapeutics, neither is it the worst. It occupies a position intermediate in value and efficiency between etiologic treatment and symptomatic treatment. It is based on theories of the nature and trend of the body's reaction against the morbific agent. Treatment based on pathologic physiology can be effective only by ascertaining and respecting the physical and psychical peculiarities of each individual and the relations in which he stands to his family, his work, his education, his place of residence and many other aspects of his environment.

17. **Pulmonary Gymnastics in Tuberculosis.**—Otis believes that experience has shown that no harm results from the employment of pulmonary gymnastics in properly selected cases, nor than any appreciable influence is produced on the course of the disease, except that the patients feel better and imagine that deep breathing is beneficial to them. He defines the suitable cases as those which are in the process of arrest, with no acute symptoms and in good or improving general condition, and the incipient cases, with little or no activity and with no marked evidence of general deterioration. The so-called rest cases, the acute or non-quiescent cases, are unsuitable for pulmonary gymnastics. Otis says that it is obvious that pulmonary gymnastics are to be applied with the same discrimination and individual application as any other form of treatment. Indiscriminate use of them can only be followed by the same results as the indiscriminate use of any other remedy.

18. **Id.**—For several years a large number of the patients at the Massachusetts State Sanatorium have practiced a simple deep breathing exercise, lasting about one minute, four times daily. Dpring a period of about three years Dunham measured the lung capacity of each of these patients every sixty days. He thinks that the breathing exercises tended to enlarge the chest capacity. In no case was a patient discharged unimproved who had developed an increase in lung capacity, whereas failing health was always associated with a marked decrease in the number of cubic inches of air the lungs contained. In regard to irritation of the diseased area by respiratory movements, the statistics show that the wearing of a belt in place of suspenders has always been attended by benefit and never by harm, and that the wearing of suspenders and discarding of the belt has, in at least one case, been associated with the onset of the disease.

Of about thirty patients who were told to practice shallow breathing for a period, four were in bed with high fever before the fourth day, and in another set of patients on the same experiment a patient had her first severe cold on the very next day following instructions. In order to make a perfectly fair test of the two modes of respiration, all the patients continued with the same amount of exercise ordinarily prescribed, but during one period were instructed to take deep breaths regularly at stated intervals, and at another period were instructed to practice only shallow breathing. To insure this latter, the patients were made to wear a slight splint in the form of a swathe, so as to immobilize the upper thorax during the period in which the test was made. Almost all the patients who were selected for the experiment had moist râles and tubercle bacilli still present in their sputum, although the general condition was excellent and improvement in symptoms had been satisfactory. During the period of experimenting, two weeks, the conditions of rest and exercise remained the same. It was demonstrated that in many cases of tuberculosis in which moist râles and bacilli in the sputum are still present the breathing exercises can be indulged in without injury. There were no exacerbations during the period of deep breathing. There were several exacerbations during the period of shallow breathing. The patients all preferred the deep to the shallow respirations. They either felt the same or slightly better during the deep breathing period. The average gain in weight was greater during the period of deep breathing.

Lancet-Clinic, Cincinnati.

July 21.

19 Treatment of Chronic Arthritis Resulting from a Distant Local Infection, Especially that of the Mucous Cavities. B. Holmes, Chicago.
20 Ideal Attitude of Physician toward Alcohol, as a Medicine, a Food, and a Beverage. W. E. Shaw, Cincinnati.

New York State Journal of Medicine.

July.

21 Rôle of Pure Cow's Milk in Infant Feeding. A. Jacobi, New York.
22 *Echinococcus Cyst of the Liver. R. S. Fowler, Brooklyn.
23 Clinical Diagnosis of Status Lymphaticus. L. A. Conner, New York.
24 *Postoperative Acute Dilatation of the Stomach. J. C. Macevitt, New York.
25 By What Data, Signs or Symptoms can a Cure of Syphilis be Determined? J. M. Liebermann, New York.
26 History of the Medical Society of the State of New York. (Continued.) J. J. Walsh, New York.

22. **Echinococcus Cyst of Liver.**—Fowler reports 10 cases of echinococcus cyst of the liver observed by him, and considers the differential diagnosis of tumors of the liver in general.

24. **Postoperative Dilatation of the Stomach.**—Macevitt reports the case of a woman, aged 29, who complained principally of pain in the right and left iliac regions, great weakness and nervous depression, with derangement of the stomach and marked dyspeptic symptoms. A diagnosis was made of pyosalpinx. A supravaginal hysterectomy was performed, with removal of the left tube and ovary, the right having been removed two years previously at an operation for ovarian cyst. For three days after the operation there was almost constant vomiting, pain in the wound and over the stomach, with eructation of gas. On the fourth day the temperature rose to 101; there was little vomiting, but much pain all over the abdomen, which was distended, tense and painful to touch. The vomitus became fecal in character; the abdominal distension continued to increase. On reopening the abdomen the stomach was found to be enormously distended, completely filling the abdominal cavity and extending into the pelvis. The stomach was emptied of its gaseous contents by means of a stomach tube. Rectal feeding and gastric lavage were resorted to with gratifying results, the patient being discharged cured on the twenty-second day.

Journal of the Minnesota State Medical Association and the Northwestern Lancet, Minneapolis.
July 15.

27 Limitations of Surgery in Diseases of the Kidneys. D. S. Fairchild, Des Moines, Iowa.
28 *Indications for Surgical Operations During Pregnancy. A. E. Benjamin, Minneapolis.
29 *The Physician as an Independent Therapeutist and Prescriber, and an Opponent of Quackery in General. W. A. Chamberlin, Owatonna, Minn.
30 The Diseased Faucial Tonsil and its Operative Treatment. W. B. Murray, Minneapolis.

28. **Operations During Pregnancy.**—Benjamin urges that all pregnant women who have had any former abdominal disease, or who have unusual symptoms during the pregnant state, should be examined carefully and their former histories studied for any abdominal or pelvic diseases which might interrupt pregnancy or endanger the life of the mother. He believes that operations, when performed carefully, on a pregnant woman do not necessarily cause the uterus to expel its contents, nor do they, when indicated, result in additional danger to the patient. On the contrary, they may be life-saving by removing a diseased organ before walled-off micro-organisms break through the enveloping membrane and the poison is disseminated throughout the abdomen, or from pressure, pain, etc., uterine contractions expel the fetus.

29. **Physician as Independent Therapeutist.**—Chamberlin claims that there are three classes of physicians on whom manufacturers may depend to a certainty to act as the media for furnishing recommendations and to solicit patronage for their products: 1. Those incompetent to formulate a rational and strictly scientific prescription adapted to the individual case under consideration. 2. That class who are too indolent, or, in common parlance, too lazy to do so. 3. A smaller number who account themselves too busy to bestow a thought on other better and more common-sense methods. He says that the habit of prescribing proprietary preparations, known or unknown, conduces to mental apathy and carelessness on the part of the principal, to inaccuracy regarding constituents and dosage and to uncertainty as to expected results, often imposing an unnecessary burden of expense on the patient, as these medicines are usually furnished to the trade at exorbitant prices.

Virginia Medical Semi-Monthly, Richmond.
July 27.

31 Importance of the Early Recognition of Gallstones. A. E. Reeves, Farnham, Nebraska.
32 Medical Materialism, Insurance Fees, Expert Testimony, etc. J. H. Pierpont, Pensacola, Fla.
33 Case of Hodgkin's Disease. W. H. Atkinson, Washington, D.C.
34 *Case of Tic Douloureux. L. Keller, Ironton, Ohio.
35 Six Cases of Epidemic Jaundice in the Young. E. W. Robertson, Onancock, Va.
36 Principles of Surgery. S. McGuire, Richmond.

34. **Tic Douloureux.**—Keller reports the case of a man who had suffered severely from neuralgia, particularly of the lower jaw on the right side. He had his teeth extracted; the inferior dental nerve was removed; he tried all kinds of remedies and forms of treatment, including the climatic, but he got only very slight temporary relief. During the removal of the inferior dental nerve a branch of the facial was cut, which produced paralysis of the supraorbital muscles of the right side, a condition which still exists. Finally, as a last resort, 25 drops of a 1.5 per cent. solution of osmic acid were injected into and around the nerve at the mental foramen, posterior palatine, and superior and inferior orbital foramina. After the first injection the pain ceased, except in the roof of the mouth. Two weeks later the posterior palatine foramen was injected. One week after this the pain left and it has not returned since. The patient now has atrophy of the muscles of the right side of the face, paralysis of the right supraorbital nerve and profuse secretion of saliva from the right parotid gland, but otherwise enjoys good health.

Pennsylvania Medical Journal, Athens.
July.

37 The Physician, His Rights, Duties, and Liabilities under the Laws of Pennsylvania. W. S. Diehl, Scranton.
38 *Neglected Incomplete Rupture of the Perineum and its Cure. J. C. DaCosta, Philadelphia.
39 Office Treatment of Hemorrhoids. W. M. Beach, Pittsburg.
40 *Thyrotomy Versus Laryngectomy. C. Jackson, Pittsburg.
41 Effect of Tobacco on the Nose, Throat and Ear. L. S. Somers, Philadelphia.
42 The Ophthalmoscope as a Diagnostic Instrument. J. J. Brown, Bloomsburg.
43 Urinalysis. C. F. McDowell, Newcastle.

38. **Neglected Incomplete Rupture of Perineum.**—The cystocele which usually accompanies a neglected incomplete rupture of the perineum Da Costa repairs by making a large oval submucous denudation with a pair of blunt-pointed scissors, the denuded mucous membrane being then removed by scissors bent on the flat. Interrupted stitches of chromicized gut or of silk are used to close the wound, the needle entering the mucous membrane about an eighth of an inch from the edge of the denudation, going directly across under the tissues, picking up the raw surface and emerging on the other side about an eighth of an inch from the edge of the wound. These stitches when tied make a firm dense ridge or band in the median line of the vagina. The perineorrhaphy is then done in the manner described by Da Costa in 1881.

40. **Thyrotomy Versus Laryngectomy.**—Jackson claims that if cancer of the larynx is discovered early the comparatively slight operation of thyrotomy will cure it. If discovered late total or partial laryngectomy will probably prolong life for a variable period, but recurrence is fairly certain and the short extension of existence lacks many pleasures and comforts. The early curable stages of laryngeal cancer are characterized by nothing but the hoarseness, which may disappear and recur. In the curable stage the patient may consult the physician to get something for a cold that he can not shake off, without any idea of the serious condition, thus throwing the physician off his guard. Cough, odor, pain, odynophagia, glandular involvement, external swelling, emaciation, cachexia, etc., are present only after the curable stage is passed. In early thyrotomized cases the prognosis as to cure is better than in chronic laryngitis.

Journal of the Medical Society of New Jersey, Newark.
July.

44 Study of Structure in its Relation to Practical Medicine. J. Tomlinson, Bridgeton, N. J.
45 Oration on Surgery—Medical Society of New Jersey. T. W. Harvey, Orange, N. J.
46 *Proprietaries, Physicians and Proprieties. F. M. Corwin, Bayonne.
47 Causes of Irritative Cough. J. W. Martindale, Camden.
48 Treatment of Pulmonary Tuberculosis. T. W. Corwin, Newark.

46. **Proprietaries, Physicians and Proprieties.**—Corwin attempts to show that each and every time a physician is beguiled into prescribing or recommending some nostrum he is forging for himself the fetters of habits which in time place him entirely at their mercy and leave him enrolled in the army of the supporters of nostrums, humbugs and fakes of all kinds. Corwin believes that there are many meritorious and worthy articles among the proprietaries, articles which no wide-awake, up-to-date physician can afford to be without, but for every one of these meritorious preparations there are a dozen or more which have no valid claim for consideration. Physicians should familiarize themselves with the Pharmacopeia, he says, but should not adhere to it literally, because to do so would be to block the wheels of progress. The Pharmacopeia is supposed to reflect the needs of the medical profession. Corwin suggests in this connection that if the profession took more interest in the Pharmacopeia it might be made more comprehensive, and hence, perhaps, more useful. He places the blame for much of the facility with which physicians are led into the use of nostrums on a deficient education and knowledge of materia medica and pharmacology. He suggests that every physician familiarize himself thoroughly with the properties of thirty or forty useful drugs, and their most palatable and convenient preparations, and that he avail himself of the knowledge possessed by some up-to-date pharmacist. The physician need not fear that he will be exposing his ignorance, because the druggist, in all probability, is familiar with his prescriptions and knows all about the doctor's knowledge of therapeutics. He will consider this an exhibition of confidence in him on the part of the doctor, and it will only serve to elevate the latter in the opinion of the former. A better understanding of each other will be mutually beneficial.

Physicians should ignore altogether the preparations of secret compositions and the alleged synthetics put out by some unknown house, which exists solely for the purpose of making

and selling a few specialties. These articles of secret composition are no more worthy of confidence and patronage than are the so-called "patent medicines" which are advertised to the laity as cures for every known ailment. He also urges shunning all proprietaries which, while perhaps in themselves unobjectionable, have been exploited or marketed in such a way as to become well-known to the general public and to be found in the department stores. The surface of the earth has now been raked over so carefully by the searchers for the useful that it is safe to assume that about all the plants and trees and minerals of any known or supposed therapeutic value have been brought to the pharmacologic laboratory and made to yield up their active principles for medicinal use, so that the profession may well look with suspicion an any alleged preparation of a hitherto unknown plant. With synthetics the case is different.

The Post-Graduate, New York.

July.

49 Cases Illustrating Panas' Operation for Strabismus and Diplopia. E. S. Peck, New York.
50 Etiology of Diabetes Mellitus. F. E. Sondern, New York.
51 Surgical Complications of Diabetes. S. Lloyd, New York.
52 Lisbon and Its Medical Congress. R. Gulteras, New York.
53 Relation of the Lymphocytes to the White Blood Corpuscles. M. Einhorn, New York.
54 Case of Convergent Strabismus; Panas Operation. D. B. St. John Roosa, New York.

Archives of Otology, New Rochelle, N. Y.

June.

55 Symptoms and Treatment of Sinus and Jugular Thrombosis. R. R. Kennon, Norfolk, Va.
56 Infective Sinus Thrombosis; Varieties of General Infection and Treatment. A. Knapp, New York.
57 Two Cases of Grave Complication of Purulent Ear Disease Operated on. J. S. Barr, Glasgow.
58 Functional Examination of the Hearing with Tuning-Forks in Monolateral Deafness, with Deductions on Bone Conduction and the Function of the Sound-Conducting Apparatus. Bezold, Munich.
59 Incorrect Deductions from Experiments with Tuning-Forks on the Function of the So-called Sound-Conducting Apparatus. G. Zimmermann, Dresden.

Texas Medical News, Austin.

June.

60 Rectal Feeding. T. J. Bennett, Austin.
61 Joint Wounds. H. Hill, Austin.

Annals of Otology, Rhinology and Laryngology, St. Louis, Mo.

June.

62 An unusual Growth of the Mastoid Process, Fibrochondro-osteoma of the Mastoid Antrum. S. M. Smith, Philadelphia.
63 Indication for Operative Interference in Mastoiditis Associated with Acute Suppurative Otitis Media. T. M. Hardie, Chicago.
64 *Case of Primary Syphilitic Infection in the Nose. J. T. Campbell, Chicago.
65 Case of Abscess of the Temporosphenoidal Lobe of Otitic Origin. J. J. Kyle, Indianapolis.
66 Indications and Contraindications for Intralaryngeal Operation in Tuberculosis of the Larynx. C. F. Welty, San Francisco.
67 Mouth-Breathing in Relation to Mental and Moral Hygiene. R. A. Harris, Los Angeles, Cal.
68 An Operation for the Painless and Bloodless Removal of Submerged and Adult Tonsils. F. B. Kellogg, Los Angeles.
69 Section of Temporal Bone; Temporal Bone of Child; Metal Cast of Ear. H. Hastings, Los Angeles.
70 Eustachian Catheterization Through the Mouth. H. A. Kiefer. Los Angeles, Cal.
71 Demonstration of Sequester of the Temporal Bone Obtained During a Mastoid Operation. H. L. Wagner, San Francisco.
72 A New Tonsillotome. E. Pynchon, Chicago.
73 Nasal Obstruction a Cause of Deafness. D. H. Trowbridge, Fresno, Cal.
74 Morphology and Embryology of the Nasal Fossæ of Vertebrates. L. Dieulafe.

64. This paper appeared in THE JOURNAL, May 5, 1906, p. 1352.

Medical Standard, Chicago.

July.

75 Notes from Nothnagel's Clinic. G. B. Hassin, Chicago.
76 Gastroduodenal Dilatation (la Splanchnoptosia). B. Robinson, Chicago.
77 Citrate of Soda in Infant Feeding. J. W. Vandersilce, Chicago.
78 Practical X-ray Therapy. N. M. Eberhart, Chicago.

Journal of Nervous and Mental Disease, New York.

July.

79 The Position of the Atypical Child. W. H. Grossmann.
80 Neuritic Type of Progressive Muscular Atrophy. A. Church, Chicago.
81 Syringomyelia, with Involvement of Cranial Nerves, probably, A Syringobulbia. A. Church, Chicago.
82 Hereditary Cerebellar Ataxia and General Paresis. H. T. Patrick, Chicago.

Journal of the Arkansas Medical Society, Little Rock.

July 15.

83 *Ainhum. O. M. Bourland, Van Buren.
84 *Ophthalmia Neonatorum. R. H. T. Mann, Texarkana.
85 Abettors and Accomplices of Fraud. W. Breathwit, Draughon.

83-84. See THE JOURNAL, May 26, 1906, p. 1641.

Vermont Medical Monthly, Burlington.

July 15.

86 Cerebrospinal Meningitis. G. R. Pisek, New York.
87 Id. W. S. Phillips, Arlington, Vt.
88 Two Cases of Infantile Scurvy. B. D. Colby, Sudbury, Vt.
89 Standard Remedies in the Treatment of Diseases. J. H. Judkins, Northfield, Vt.

St. Louis Courier of Medicine.

July.

90 Relation of Syphilis to Cancer of the Mucous Membrane. W. P. King, Kansas City, Mo.

Medicine, Detroit, Mich.

July.

91 Visual Hallucinations on the Blind Side in Hemianopsia. C. W. Burr, Philadelphia.
92 Ornithodoris Moubata, Murray; A Disease-Bearing African Tick. F. C. Wellman.
93 Jaundice, with Special Reference to its Diagnostic Value. C. E. Hansel, South Bend, Ind.
94 Sterility in Women; Its Causes and Management. E. A. Schumann, Philadelphia.
95 Prognosis of Pulmonary Tuberculosis as Determined by the Morphology of the Tubercle Bacillus in the Sputum. R. C. Rosenberger, Philadelphia.
96 Points on Dietary in Disease. H. B. Hollen, Fond du Lac, Wis.
97 Surgical Aspects of Gastric Dyspepsia. J. B. Deaver, Philadelphia.
98 Hyperesthesia of the Gastric Mucous Membrane and its Treatment. J. D. Steele, Philadelphia.

Medical Herald, St. Joseph, Mo.

July.

99 *Club Foot, with Special Reference to the Postoperative Treatment. M. M. Edmonson, Kansas City.
100 Indirect Effects of Valvular Lesions. W. F. Milroy, Omaha, Neb.
101 Note on the Improper Management of Epileptics. M. R. Hughes, St. Louis.
102 Suprapubic Cystotomy as a Preliminary to, and as a Route for the Performance of a Considerable Number of Prostatectomies. W. T. Elam, St. Joseph.
103 Pathology of Lobar Pneumonia. A. J. Cramp, Milwaukee.
104 Neuroses. W. T. Marrs, Jewett, Ill.

99. See abstract in THE JOURNAL, April 7, 1906, p. 1055.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal.

July 7

1 *Points in the Surgery of the Lung. W. Macewen.
2 *Borderland of Epilepsy. W. R. Gowers.
3 Neurasthenia; Its Nature and Treatment. D. Drummond.
4 *On Cancer. S. Wilks.
5 *Opsonic Theory and Its Practical Application to Medicine and Surgery. G. W. Ross.
6 *Opsonic Index of Tuberculous Patients Undergoing Sanatorium Treatment. G. A. Grace-Calvert.
7 *Electro-Motive Changes in Heart-Block. G. A. Gibson.

1. **Points in Surgery of Lung.**—In this, the Cavendish lecture, Macewen discusses the physical, physiologic and pathologic phenomena met in dealing with human lungs and their pleuræ.

2. **Borderland of Epilepsy.**—According to Gowers, the affection which constitutes by far the largest number of these borderland cases is vertigo, that variety which is produced by labyrinthine disease. The differential diagnosis of this form of vertigo and epilepsy is discussed in full and illustrative cases are cited.

4. **Cancer.**—Wilks calls attention to the fact that as early as 1857 he pointed out that cancer cells showed no special characters which could differentiate them from all other cells and that his theory of cancer was that if these cells did not do their duty and follow their destination so as to produce natural tissue, but continued to increase in number without developing, they formed a mass or tumor to which the name of cancer was given. He does not favor the germ theory of cancer.

5. **Value of Opsonic Index in Diagnosis.**—Ross has been using opsonic methods in the diagnosis of tuberculosis for the

past nine months in the every-day work of a hospital which has largely to do with pulmonary tuberculosis. The result has been a very satisfactory one. In the diagnosis of the chronic forms of pulmonary tuberculosis from similar and non-tuberculous diseases he has used with success the opsonic reaction in the malignant disease of the lung, chronic bronchitis and emphysema, bronchiectasis and general stability. He believes that in the diagnosis of early phthisis difficulties that now exist will be overcome, and that the estimation of the tuberculo-opsonic index will eventually prove of material assistance in the diagnosis of many of these cases.

6. **Opsonic Index of Sanatorium Patients.**—Calvert reviews the present knowledge of the value of being familiar with the opsonic index of tuberculous patients who are undergoing treatment in the sanatorium.

7. **Electro-motive Changes in Heart-block.**—The patient who furnished Gibson the opportunity of investigating the electro-motive heart-block was a man, aged 56, who had suffered from acute pneumonia on two occasions and who had had several attacks of bronchitis. During the last two years he has had attacks of faintness, occurring at varying intervals, and during the same period he has had severe pain in the chest, with a sense of constriction. The arteries were thickened and nodular, but not distinctly tortuous. The rate of the pulse is 36. It is perfectly regular. The pressure is high. A distinct impulse is seen in the sixth intercostal space close to the anterior axillary line. The borders of the heart extend two inches to the right and five inches to the left of mid-sternum. On auscultation there is a loud blowing systolic murmur heard over the whole precordia and propagated for a considerable distance in every direction over the chest. The maximum intensity of this murmur is in the mitral area. No other murmur is audible. The second sound is clear and ringing, especially in the aortic region; it is sometimes reduplicated. There are no pulmonary symptoms, and the physical signs of the chest reveal no abnormality. The renal functions are healthy. As regards the digestive system, there is slight increase in the size of the liver. The nervous system gives no obvious symptoms except the faintness, giddiness and pain already mentioned. The radial pulse yields a tracing, showing a quick ascent and a slow descent; in its features it closely resembles the pulsus bisferiens; it has a few little waves on the line of descent. Simultaneous tracings of the jugular and radial pulses show distinct undulations of the venous pulse between the radial pulsations, and the same may be said of the simultaneous tracing obtained from the apex and the radial artery. In each cycle there is a distinct wave seen in the apex beat intermediate between the principal pulsations.

When examined by means of the fluorescent screen the dissociation of auricular and ventricular movements could be seen clearly. The auricles contracted three or four times, as a rule, for each ventricular systole. Gibson studied the electro-motive changes by means of Waller's apparatus. Leading off from the basal region of the precordia to the acid, and from the apical to the mercury, the usual diphasic movements of the capillary column were clearly seen preceding the apex beat, and evidently resulting from ventricular systole. But in the interval between these movements other smaller waves were distinctly seen and can only be attributed to the systole of the auricles. As these latter movements were small, as observed by the direct method with the microscope, it was impossible to be certain of their exact character, but they seemed, like the ventricular, to be diphasic. When thrown on the screen by means of the projection microscope they were obviously diphasic in their character.

The Lancet, London.

July 7.

8 *Myelitis. J. S. R. Russell.
9 *Tuberculosis of the Cecum, Ileocecal Valve and Appendix. C. B. Keetley.
10 *Means of Checking the Spread of Sleeping Sickness. J. L. Todd.
11 *Note on the Action of the Serum of Various Mammals of the Bacillus Pestis. G. Lamb and W. H. C. Forster.
12 *Old and the New in Ocular Therapeutics. A. M. Ramsay.
13 Medical Attendance on the Working Classes. J. H. Keay.
14 *Two Cases in which Gastroenterostomy was Performed in the Course of Operation for Perforated Ulcer. E. Ward.
15 Case of Cyanosis with Polycythæmia. J. W. Russell.
16 *Case of Hematomyelia due to Trauma. W. A. Rees.
17 *Motor-Driver's Spine. W. J. Burroughs.
18 Throat Affections. W. H. Kelson.
19 *Lenhartz Treatment of Gastric Ulcer at the Eppendorfer Krankenhaus, Hamburg. J. V. Haberman.

8. **Myelitis.**—In discussing the treatment of this condition Russell says that nothing can compare with mercury, and that mercury rubbed in is to be preferred to mercury given by the mouth. Whether the mercury is rubbed into other parts or not, it should certainly be rubbed along the spinal column.

9. **Tuberculosis of Cecum, Ileocecal Valves and Appendix.**—Keetley believes that general tuberculous peritonitis often arises in tubercle of the cecum or in the mesocecal glands. Whenever laparotomy is performed for that disease the cecum, mesocecum and appendix should be examined carefully for tubercles, and at least in males, the question should be entertained of incising in the iliac region rather than in the median line. He also points out that there might be a fair hope of curing ileocecal and appendiceal tuberculosis without excising the disease, by an ileostomy combined with suitable general treatment. He has seen good results ensue from treating extensive tuberculous ulceration of the rectum with fistulæ by simple scraping combined with an inguinal colotomy, kept open until the tuberculous ulceration had healed thoroughly.

10. **Check of Sleeping Sickness.**—Todd urges the institution of suitable quarantine measures to prevent the further spread of sleeping sickness in the Congo basin, which has been due in great measure to the increase of travel following the opening up of the country. The measures recommended are: (1) The establishment of medical posts of inspection along the trade routes leading from infected to uninfected districts, and (2) the removal of infected persons from posts in infected districts to places already infected. The disease may be detected in its earliest stages, when the patient often is apparently well and makes no complaint, by the existence of enlarged lymphatic glands in the neck. Trypanosomes can easily be found in the juice aspirated from such glands by means of a hypodermic syringe.

11. **Action of Mammalian Serum on Bacillus Pestis.**—The experiments conducted by Lamb and Forster show that normal mammalian serum is devoid of any bacterial action on *Bacillus pestis*.

12. **Ocular Therapeutics.**—Ramsay gives a brief historical review of the progress made in refraction and in the use of mydriatics, antiseptics, anesthetics and analgesics, and serum therapy.

14. **Gastroenterostomy for Perforated Gastric Ulcer.**—In the first case reported by Ward, that of a man, aged 55, who had irregular attacks of severe abdominal pain for thirty years, the operation was commenced six hours after the onset of the last attack. The perforation was close to the pylorus, was about three-eighths of an inch in diameter, of the usual punched-out appearance, with widespread thickening, induration and puckering of the walls of the stomach and duodenum. Four sutures of stout Pagenstecher thread were placed very widely, infolding about three-fourths of an inch on each side of the opening and placing the ulcer at the bottom of a steep gutter. This procedure practically closed the pylorus and a posterior gastroenterostomy was done according to Littlewood's method. The patient has resumed his ordinary activities and is now quite well in every respect.

The second patient, a man, aged 39, suffered from pain in the stomach about two years, when he was suddenly seized with a very violent pain in the abdomen, radiating from the umbilicus. On opening the abdomen there was seen a circular opening about three-eighths of an inch in diameter on the anterior upper surface of the duodenum, well beyond the pylorus and almost inaccessibly recessed under the liver. The opening was closed by Lembert sutures passed very widely. When this was completed it was seen that the infolding of the stiffened tissues had occluded the duodenum, necessitating the gastroenterostomy, which was performed by the anterior method. The patient made a perfect recovery.

16. **Hematomyelia.**—Rees reports a case of hematomyelia caused by a fall from a wagon, the patient striking the back of his head and shoulders on the ground, in which the reflexes

were present on the patient's admission to the hospital, about half an hour after the accident. He ascribes this to the fact that the hemorrhage had not finished extending, as the patient was seen so soon after the accident. On the third day the reflexes were entirely abolished. They reappeared at the end of the first week. No spinal-myosis was noticed in this case.

17. **Motor-driver's Spine.**—Burroughs adds another occupation disease to the already lengthy list. The affection was noted in a strong, healthy looking man, aged 34, who was a motor omnibus driver. After an unusually hard day's work he complained of persistent acute pain, which he referred to the right hip and which became so intensified by pressure that he was unable to lie on that side. He also noticed a dull aching pain across the loin, more pronounced on the right, and he was unable to move the right leg, which he described as being so painful that he could scarcely bear the weight of the bedclothes on him. Burroughs is uncertain whether to ascribe this condition to a constant jarring or to excessive muscular effort required to start the machine. The patient eventually recovered.

19. **Lenharts' Treatment of Gastric Ulcer.**—The treatment of gastric ulcer employed at the Eppendorfer hospital in Hamburg, Germany, according to Haberman, briefly is as follows: Absolute rest in bed for at least four weeks. All mental excitement is avoided. An ice bag is placed on the stomach and kept there almost continually for two weeks. This prevents gaseous distension, prompts contraction of the stomach walls, thus tending to obviate hemorrhage, and eases the pain when present. On the first day, even where hematemesis has occurred, the patient receives between 200 and 300 c.c. of iced milk, given in spoonfuls, and from two to four beaten eggs within the first twenty-four hours. At the same time bismuth subnitrate is given twice or thrice a day, two grams pro dosi, and continued for ten days. The eggs are beaten up entire (with a little sugar) and the cup containing them is placed in a dish filled with ice, so that they remain cold. Sometimes a little wine is added. This food at once "binds" the supersecreted acid and therefore mitigates the pain rapidly and causes the vomiting, often quite troublesome, to cease. The portion of milk is increased daily by 100 c.c., and at the same time one additional egg is given, so that at the end of the first week the patient is receiving 800 c.c. of milk and from six to eight eggs. Both these foods are now continued in the same amount for another week. For reasons given above, no more than one liter of milk a day is allowed at any time. Besides milk and eggs, some raw chopped meat is given from the fourth to the eighth day, usually on the sixth, 35 grams a day, in small divided doses (easily stirred up with the eggs or given alone); the day after 70 grams, and later possibly more if well digested. The patient is now able to take some rice or "greiesbrei," well cooked, and a few zwieback (softened). In the third week quite a mixed diet is tolerated, the meat being given well cooked or lightly broiled. All heavy foods are, of course, interdicted, as well as vegetables with husks, etc., and those tending to produce flatulence. At the same time the patient is given strict orders to masticate his food thoroughly. The bowels are not to be moved, both in order to avoid any peristaltic irritation and to permit the reabsorption of blood that may have passed into the intestine. In fact, one need pay absolutely no attention to constipation in the first week, even in many cases to the end of the second. After the second week the bowels are moved with small glycerin injections or warm water, and after the third week this is done daily if a movement does not occur spontaneously. After this one tries to control the bowels by means of the food and by getting the patient to go to stool regularly. For the anemia iron is given in the form of a soft preparation of Blaud's pills:

R.	Ferri sulphatis	3iiss	10|
	Magnesii	gr. xxx	2|
	Glycerini	gtts. xxx	2|

Misce, et div. in pil No. lx. Sig.: Two pills to be taken two or three times a day.

The majority of patients are cured in forty-eight weeks. In no case has it been manifest that any unfavorable effects are produced by the treatment.

Journal of Tropical Medicine, London.

July 2.

20 Further Report on Measures Taken in 1901 to Abolish Malaria from Klang and Port Swettenham in Selangor, Federated Malay States. E. A. O. Travers, and M. Watson.
21 Anatomy of the Biting Flies of the Genera Stomoxys and Glossina. (To be continued.) G. M. Giles.

Intercolonial Medical Journal of Australasia, Melbourne.

May 20.

22 Intestinal Obstruction due to Reflex Nerve Disturbance. C. P. R. Clubbe.
23 Open Air Treatment of Consumption. A. A. Lendon.
24 *Experience of the New Tuberculin. T. R. Koch, W. H. Brown.
25 *Appendicectomy an Hour after Parturition. J. W. D. Hooper.
26 *Two Interesting Surgical Cases. J. M. Baxter.
27 Case of Symphysiotomy. J. W. D. Hooper.
28 Lymph Lavage in the Treatment of Certain Skin Diseases. H. Lawrence.
29 Food Factor in Disease. A. J. Turner.
30 Case of Congenital Syphilis (Spirochæta Pallida Demonstrated). F. H. Cole, and H. D. Stephens.

24. **Experience with Koch's New Tuberculin.**—Brown reports three cases of tuberculosis of the bladder in which the new tuberculin was used successfully.

25. **Appendicectomy Complicating Pregnancy.**—Hooper reports a case which is rather unusual. At 10 o'clock in the morning the patient was perfectly well. At 2:30 p. m. and again at 3 p. m. she vomited and had considerable pain. Hooper saw her half an hour afterward and found her lying on the bed on her left side, with the right knee drawn up and a very anxious expression on her face. The pulse was 120, full and regular; temperature, 99. There was no albuminuria. The right iliac region was exceedingly tender and the diagnosis of acute appendicitis was made. The following morning there was still tenderness on pressure over the appendix, and there was also some swelling. Temperature and pulse were practically normal. The patient was removed to the hospital for operation, but on the way the labor pains commenced, and at 3:30 p. m. the labor terminated naturally. At 4:15 p. m. an appendicectomy was performed and disclosed an appendix of large size about ready to rupture. The patient recovered.

26. **Interesting Surgical Cases.**—The first case reported by Baxter was one of abscess in the neighborhood of the base of the bladder, which burrowed its way into the groin, simulating an irreducible femoral hernia. The second case was one of appendicitis, the pain being referred to the right kidney, so as to simulate disease of that organ. The appendix pointed toward the right kidney.

Revue de Gynécologie, Pozzi's, Paris.

Last indexed XLVI, page 1053.

31 (X. No. 2.) *Nouvelle Méthode d'hystérectomie abdominale totale. H. Chaput.
32 *La tuberculose du col de l'utérus (cervix). A. Pollosson and H. Violet (Lyons).
33 Sur le traitement chirurgical de l'ulcère calleux pénétrant de l'estomac. R. Leriche (Lyons). Two cases.

31. **Improved Technic for Total Abdominal Hysterectomy.**—Chaput follows Kelly's method of abdominal hysterectomy except in regard to the hemostasis and the closure of the wound left in the pelvis. In a series of 50 cases there has been only one death and this could not be ascribed to the intervention. The operation is as simple, he says, as the radical treatment of a hernia. This is due to his method of walling off the pelvis (*cloisonnement élevé*). After removing the uterus and the adnexa, the flap of peritoneum from bladder and uterus is brought up to the superior strait or inlet of the pelvis and sutured across it, thus forming a floor and separating permanently the small pelvis from the large cavity. Theoretically, it would seem impossible to spread such a small flap over such a large expanse. But in fact the flap is so elastic that it can easily be stretched to fill the space, and it is a simple matter to suture it to the peritoneum of the inlet or superior strait, including the sigmoid loop where it projects into the strait, with care not to leave crevices along the sides of the sigmoid loop. He uses a continuous silk suture with curved needle. Catgut, he says, is absorbed too rapidly. He gives an illustration of an abruptly curved trocar forceps to use in ligating the ligaments, and a broad, flat, curved malleable retractor, to which instruments he attributes some of his success. He never drains through the anterior abdomen, but introduces a drain, 2 cm. in diameter, into the vagina through the abdomen, suturing it to the cut surface of the

vagina. His total technic includes in turn ligature of the upper part of the two broad ligaments, cutting the peritoneal vesico-uterine flap, ligature of the lower part of the right broad ligament, opening the anterior vaginal cul-de-sac and complete detachment of the vagina, ligature of the lower part of the left broad ligament, hemostasis of the posterior vaginal cut surface with an over-and-over catgut suture, holding the parts exposed with his malleable retractor, then introduction of the drain into the vagina, suturing it to the wall of the vagina, and finally the shutting off of small pelvis with the flap of peritoneum sutured across the inlet above. His trocar forceps are used to pierce the broad ligaments, the hole thus made is enlarged by spreading the blades, and a thread is drawn through as the forceps is withdrawn. It is impossible for a ligature to slip, applied in this way, and hemostasis is perfect. If there should be a little oozing at the juncture of the two pedicles into which the ligament is tied off, a few stitches are taken at this point. He confines the patient to liquid diet for the first three days. The evening of the third day he orders an enema. If this brings a good passage he commences the next morning with ordinary light food. If the enema is not followed by stool he repeats it on the succeeding days until the desired result is obtained. He rarely gives a purgative after a laparotomy.

32. **Tuberculosis of Cervix.**—Pollosson has encountered 2 cases of tuberculosis of the cervix, and has collected 55 from the literature. He reviews and gives the details of this total of 57 cases. His conclusions in regard to treatment are all in favor of reasonably conservative measures. When the adnexa are sound he would restrict intervention to vaginal amputation of the cervix, hoping to cure the generally concomitant tuberculous processes in the uterus by local measures after amputation of the cervix. In case of advanced lesions, abdominal total hysterectomy is indicated, as also in case of apparently extinct foci. The traumatism of amputation of the cervix might rearouse the process, and hence an abdominal total hysterectomy is preferable.

Revue de Médecine, Paris.

Last indexed XLVI, page 1091.

34 (XXVI, No. 2.) Nitrogen Metabolism in the Tuberculous—Echanges azotés chez les tub. H. Labbé and G. Vitry.
35 Influence du sel sur le travail (salt and working capacity). C. Féré.
36 *Diagnostic de la tuberculose. Mérieux.
37 *Traitement des parapégies spasmodiques par des exercices. M. Faure.
38 L'éclampsie puerpérale. De Bruine P. van Amstel.
39 (No. 3.) *Les anémies des tuberculeux. M. Labbé.
40 *Recherches histologiques sur l'écorce cérébrale des tuberculeux (cortex). Laignel-Lavastine.
41 (No. 4.) Cas d'acromégalie sans hypertrophie du corps pituitaire avec formation Kystique dans la glande. Widal Roy, and Froin.
42 L'angoisse au cours de la paralysie générale. C. Féré.
43 Les représentations obsédantes hallucinatoires et les hallucinations obsédantes (obsessions). S. Bonchanoff.
44 Une variété clinique de l'insuffisance mitrale expliquée par certaines dispositions anatomiques du système vasculaire. S. Salaghi.
45 *Origin of Sleep.—Origine du sommeil. Etude des relations entre le sommeil et le fonctionnement de la glande pituitaire. A. Salmon.

36. **Indirect Diagnosis of Tuberculosis.**—Instead of injecting tuberculin into a supposed tuberculous patient, Mérieux reverses the procedure and injects serum from the patient into a tuberculous guinea-pig. The serum acts in the same way as the ordinary reaction to tuberculin, sending the animal's temperature up or down if it is from a tuberculous individual. On the other hand, if the individual is not tuberculous there is no temperature reaction in the guinea-pig after injection of the serum. This indirect test was described in THE JOURNAL when it was first published in 1904. Mérieux has now applied it in 94 cases, and in every instance the course of the case confirmed the findings of the test. He calls the serum from the blood or a blister the "reactional tuberculous product" to distinguish it from tuberculin which is elaborated in cultures of the bacilli. These "reactional tuberculous products" injected into a guinea-pig from three to six weeks after it has been infected with tuberculosis cause a thermic reaction between the second and sixth hours, and again usually between the twenty-fourth and thirtieth hours. The temperature varies by one or two Centigrade degrees from the preceding temperature of the animal. It generally rises, but may drop. The second change in the temperature may last for several hours and the animals seem depressed.

37. **Exercises in Treatment of Spasmodic Paraplegia.**—Faure reports excellent results in 40 cases of permanent contracture of the legs from some lesion or irritation of the spinal motor centers, in which he trained the patients in passive and active exercises. His method is by brief periods of exercise, with intervals of rest, continued through months. The exercises were repeated once or twice a day for from one to three months, with an interval of from one to several months of rest. One patient was under treatment thus for four years, but one year was generally the limit. The cure or improvement has been permanent to date in some cases after an interval of from two to four years. Two of his patients are completely restored and can run and jump; 2 can walk normally; 7 can walk with slight traces of their former trouble; 13 can walk, but rather jerky, and 10 can walk with a little effort. Four patients were unable to complete the course and 2 are still obliged to use a cane or crutches, although their condition is much improved. Fifteen had been entirely helpless before treatment was commenced.

39. **Anemia in the Tuberculous.**—Labbé distinguishes several varieties of anemia in the tuberculous. Pallor may exist without anemia, or with slight or pronounced anemia, actual chlorosis. Anemia may be present without pallor. These different conditions require different treatment.

40. **The Cortex in Tuberculosis.**—Lavastine has made a special study of the cortex in tuberculous cadavers. He was impressed with the frequency of liver lesions and believes that poisons resulting from insufficiency of the liver have a considerable share in production of the cellular lesions found in the cortex. It shows the influence of toxins in many respects in nearly every case.

45. **Sleep and the Hypophysis.**—Salmon hazards the suggestion that physiologic sleep may be essentially due to some internal secretion of the pituitary body, a hypothesis which, he thinks, harmonizes perfectly with the conception of the trophic and antitoxic function of the hypophysis in relation to the nerve centers. He presents fifteen arguments to sustain this assumption, eight based on the somnolence observed in acromegaly and other affections in which there is hypertrophy of the hypophysis, and in conditions in which the secretions—including those of the hypophysis—are augmented, as in mild pilocarpin intoxication. Also in all affections liable to induce hyperemia in the hypophysis, as in drunkenness, epilepsy, injuries to the skull, etc. On the other hand insomnia is noted when the hypophysis is destroyed or is undergoing degeneration, also in exophthalmic goiter, in which this gland has sometimes been found exceptionally small and hard, also in old age and in inanition, when the blood pressure is reduced, and in neurasthenia, which is characterized by low vascular tone and general hyposecretion. Sleeplessness is also noted in intoxication from atropin, which has an inhibiting action on the secretions, and, lastly, under the influence of emotions. This assumption explains also the disturbances in sleep in diseases such as diabetes, in which the glands with an internal secretion are all more or less affected. It also throws light on the disturbances in sleep accompanying changes in the sexual organs and in the nose, and in pregnancy, etc.

Berliner klinische Wochenschrift.

46 (XLIII, No. 17.) *Zur Kenntnis des Skorbuts. H. Senator.
47 *Fall von Herz-Neurose und Arteriosklerose nach Trauma. Goldscheider.
48 *Examination of Fresh Blood in General Practice.—Das native Blutpräparat in seiner Bedeutung für den praktischen Arzt. G. Krönig.
49 *Zur Kenntnis der Lysol-Vergiftung (Intoxication). J. Wohlgemuth.
50 *Syphilitischen Erkrankungen der Cirkulations-Organe bei acquirierter Lues. C. Bruhns.
51 Beziehungen der Radium-Emanation in der Gasteiner Therme zu deren Heilkraft. L. Wick. (Concluded.)
52 Mountain Climate.—Ueber Höhenklima mit bes. Berücksichtigung der deutschen Alpen Osterreichs. E. Epstein.
53 *Hello-Therapie der Psoriasis. M. Guhr.

46. **Study of Scorbutus.**—Senator reports research on the blood and blood-forming organs in a case of scorbutus ter-

minating fatally in about a month. The patient was a girl of 15, a servant, who for a month had been working in furs. The red blood corpuscles constantly declined in numbers to about a sixth of the normal proportion, and the hemoglobin sank still more rapidly, while the leucocytes constantly increased and the blood picture in general became that of severe simple subacute or chronic posthemorrhagic anemia. No micro-organisms could be cultivated from the blood or blood-forming organs. Nothing specific was found postmortem, the organs showing merely the hemorrhages and anemia, except for hypoplasia in the left lung and the uterus.

47. Neurosis of Heart and Arteriosclerosis in Consequence of Trauma.—A previously healthy man of 26 was struck on the head by a falling brick at his work. He was unconscious for a time and later vomited and suffered from headaches, trembling, exhaustion and other neurasthenic symptoms. The pulse was 120 and increased to 144 and 180 during exercise; the hands and feet were cold and clammy and the reflexes exaggerated. He returned a year later with a pulse of 120 when reclining, and the arteries were then found tortuous and the walls indurated; the heart was hypertrophied. The case is described in detail, showing the unmistakable development of hypertrophy of the heart and of arteriosclerosis after an accident. The connecting link was the nervous acceleration of the heart rate at once after the trauma. It was merely nervous at first as there were no signs of organic changes, and the dependence of the pulse on the nervous phenomena was shown by the increasing pulse during the Romberg test.

48. Examination of Fresh Blood in General Practice.—Krönig pleads for the more general microscopic examination of fresh blood instead of the tedious technic of staining and mounting dried blood. The drop of blood is drawn directly on the coverglass and then dropped on the slide, both slightly warmed. A little practice will show the superiority of this simple technic and the instructive findings. With it he was able to detect among other things the histologic changes in the blood corpuscles in cases of poisoning from phenacetin, from potassium chlorid, and from maretin.

49. Lysol Poisoning.—Wohlgemuth had occasion to examine the black urine of an insane man of 50 after he had ingested a quantity of lysol. The over-saturation of the body with cresol, the main constituent of the lysol, had induced an enormous production of glycuronic acid, while all the preformed sulphates had vanished from the urine. They were eliminated as ethereal sulphates. All the free sulphuric acid had combined with the cresol.

50. Syphilitic Affections of Circulatory Organs.—Bruhns reviews the achievements of the last few years in the domain of syphilitic affections of the vascular system. As they are so insidious in their development they should encourage the physician to continue intermittent treatment of syphilitic patients without waiting for manifest symptoms to develop. Especially during the first three or four years after infection, when even the slightest symptoms call attention to the vascular system, intermittent treatment is imperative, as there is probably some predisposition on the part of these organs. The youthfulness of the patients speaks against arteriosclerosis. The success of mercurial antisyphilitic treatment decides the diagnosis, but for it to be really instructive the physician must not be content with minimal dosage, but must apply an intensive course of treatment, such as 30 to 40 inunctions of 4 gm. or the like, with corresponding iodin preparations. If such a course fails to influence the symptoms then syphilis can be safely excluded.

53. Sun Baths for Psoriasis.—Guhr has been very successful with sun baths in the treatment of psoriasis, and as a preventive against its recurrence. The patient lies exposed, the head shaded, for from twenty to fifty minutes. The effect is enhanced by giving the sun bath in an open box to exclude the cold air and to keep in the warmth. The scales drop off and the effect of the sun on the exposed corium is distinctly curative. The patient takes a cold douche afterward and goes for a short walk.

Deutsche Medizinische Wochenschrift, Berlin and Leipsic.

54 (XXXII, No. 23.) Ueber den Nachweis von Spirochæte pallida in tertiär-syphilitischen Produkten Doutrelepont and Grouven.
55 Participation of Diaphragm in Erb's Paralysis.—Mitbeteiligung des Phrenicus bei Duchenne-Erbscher Lähmung. P. Moritz.
56 *Ueber Pneumococcen-Peritonitis. Robbers.
57 *Ueber Antiperistaltik des Magens (of stomach). S. Jonas.
58 *Jodoform-Behandlung der Lepra. Diesing.
59 *Zur Behandlung von Schwarzwasserfieber (black-water fever). Dammermann.
60 Roentgen Pictures in relief.—Herstellung plastisch wirkender Röntgenogramme. Albers-Schönberg.
61 Wire Gauze Electrodes.—Ersatz des Vierzellenbades. O. Galle.
62 (No. 24.) *Zur biologischen Diagnose von Infektions—Krankheiten. C. Bruck.
63 *Beitrag zur Typhusdiagnostik. W. Pöppelmann.
64 Eine Mitteilung ueber Bauchbinden (abdominal bandages). W. Ebstein.
65 Cure of Contractures by Spinal Anesthesia.—Heilung hysterischer Kontrakturen durch Lumballähmung. Wilms.
66 Zur Technik und Indikations Stellung der Spinal-Analgesie. Pochhammer.
67 Die Herstellung von Dauerpräparaten aus Harnsedimenten (durable preparations of urine sediments). E. Wolff.
68 Cost of Building Hospitals.—Ueber die Baukosten von Krankenhäusern. H. Schmieden and J. Boethke.
69 Tuberculosis and Insurance. Zur Tuberculose-Bekämpfung durch die Landes-Versicherungsanstalten. G. Heimann (Berlin).

56. Pneumococcus Peritonitis.—Robbers describes 3 cases, all terminating in recovery after evacuation and drainage of the abscess. Two of the patients were women and one a girl of 6. A tendency to spontaneous healing has never been observed in an adult with pneumococcus peritonitis. If the pneumococcus infection is diagnosed early, either by the clinical signs or by the discovery of pneumococci in the blood, it might be well to inject antipneumococcus serum. In children pneumococcus peritonitis displays a marked tendency to spontaneous cure, but active surgical intervention should always be considered and not delayed until the patient is much debilitated by fever and lack of nourishment.

57. Antiperistalsis in the Stomach.—Jonas states that antiperistaltic movements were observed in the stomach in 6 cases at Holzknecht's Roentgen Institute at Vienna. The skiagrams are reproduced. In 5 cases there was unmistakable stenosis of the pylorus, and the pyloric region was altered in the other case. The subject is discussed from various standpoints.

58. Iodoform Treatment of Leprosy.—Diesing has previously reported excellent results from treatment of leprosy with subcutaneous injections of iodoform in 2 cases, and now adds 3 more to the list. The iodoform was well tolerated by the patients and the treatment was continued for from six to twelve weeks. He uses a 30 per cent. iodoform olive oil emulsion, injecting from 2 to 8 c.c. at various points. After two weeks of treatment the nodules begin to subside. These experiences show, he claims, that the maximal dose of the Pharmacopeia can be increased in some cases by 150 per cent. without injury, and that these large doses of iodoform can be long continued without symptoms of intoxication. He believes that this intensive treatment with iodoform should be given a trial in tuberculous joint and other affections.

59. Treatment of Blackwater Fever.—Dammermann had occasion to treat a number of cases of blackwater fever during a residence of three or four years in southwest Africa, and has become convinced that the fatal termination is due to intoxication from retained urine, the uriniferous tubules becoming choked. To relieve or to prevent this, milk should be given copiously and diuresis be stimulated by a tablespoonful of a 2 per cent. solution of potassium acetate every hour or so. If milk cannot be obtained or is not tolerated, water should be given in its place, or large enemas of physiologic salt solution. Malarial patients who have blackwater fever after taking quinin should substitute the quinin with a decoction of folia Combreti Raimbauthii, 24 gm. to 1,500 gm., sipped during the day. His experience has shown that this drug deserves wider use in malaria, and he urges the German authorities to import it in larger quantities from the African colonies. It is a native remedy and proved life-saving in some of his cases.

62. Biologic Diagnosis of Infectious Diseases.—Bruck remarks that the specific diagnosis of infectious diseases by agglutination, by the determination of staphylo-antilysins, and

of bacterial substances in the blood serum, is based on the determination of specific antibodies generated during the infectious disease in question. These methods require that the diseased organism must be capable of producing antibodies, and that the organism must have been under the influence of the infection long enough for the antibodies to have been produced in sufficient amounts. Wassermann and Bruck have now perfected a method which fills the gap between the direct and the indirect technic. It is based on the presence of even the minutest amounts of the substance of dissolved bacteria in the body fluids. These substances proceeding from the bacteria are found in the body fluids before there is any production of antibodies, and consequently enable the disease to be diagnosed before the stage at which agglutination, etc., are possible. This specific biologic test is the inhibition of hemolysis. They have been able to detect the presence of the specific substance of tubercle bacilli in the blood serum by this means, even in the very earliest onset of acute generalized miliary tuberculosis, in dubious pleuritic effusions, and in 2 cases of epidemic cerebrospinal meningitis with the aid of a prepared meningococcus immune serum.

63. **Simple Test for Typhoid Bacilli in Blood.**—Pöppelmann spreads the fresh drawn blood on from one to three object glasses so that it covers one-half the glass. When dry they are placed upright in a small glass vessel or pomade box so that the film of blood projects into the staining fluid. He uses the R. May-Grünwald stain and technic which does not require the heating of the blood. After from two to six minutes in the stain the object glass is transferred for a minute to a vessel containing distilled water, and is then rapidly dried by standing upright in a warm place or between filtering paper. The typhoid bacilli stain blue and the red corpuscles orange. Better results were obtained with blood drawn in the morning than when the fever was at its height. If no typhoid bacilli can be discovered, the presumption is strong against typhoid fever, as his findings were constantly positive in all cases in which the course proved the disease to have been typhoid. The detection of diphtheria bacilli and of typhoid bacilli with these smear preparations is extremely simple, and is accurate enough for the general practitioner. He has found by this means gonococci in the purulent secretion of children's vaginas in many cases in which the idea of gonorrhea had not occurred to any one. It is important also to determine the causal germs in puerperal infection, as the discovery of putrefaction bacilli indicates curettement and a favorable prognosis in comparison with streptococci.

Deutsche Zeitschrift f. Chirurgie, Leipsic.

Last indexed XLVI, page 194.

70 (LXXXI, Nos. 2-4.) *Ueber die auf der giessener Klinik erzielten Erfolge bei der Radikal-Operation des Mastdarm Carcinoms (of rectum). K. Richter.

71 Ueber Atresia ani vesicalis. F. Lotsch.

72 *Zur Kenntnis der Harnröhren-Steine (urethral stones). H. Finsterer.

73 Firearm Wounds in Peace.—122 Fälle von Schussverletzungen aus der Berner chir. Klinik, 1872-1904. J. Halter.

74 *Ueber Blasensteine (bladder stones). C. Goebel.

75 *Murphy Button in Gastrointestinal Surgery.—Anwendung des Murphyknopfes in der Magen-Darm-Chirurgie von 1896-1905. L. Gelpke.

76 *Zur plastischen Deckung der Haut-Defekte nach Brust-Drüsen-Exstirpation (of mamma). E. Payr.

77 *Importance of Trauma for Origin and Growth of Tumors, especially of Cancer of the Stomach.—Bedeutung des Trauma für das Entstehen und Wachsthum der Geschwülste, speziell des Magencarcinoms, mit diesbezüglichen Fällen. E. Menne.

70. **Remote Results of Radical Operation of Rectal Cancer.**—Richter reviews the 64 cases of carcinoma of the rectum operated on by Poppert. The Hochenegg preliminary resection of the sacrum was done in all but one case. Four patients succumbed, one to postoperative pneumonia, one to iodoform intoxication, one in collapse five days later, and in the fourth case the tumor was found inoperable. Recurrence is known in 38 per cent. of the cases, while 20 patients are still living without recurrence, 8 of them more than three years since amputation and 9 more than three years since resection. One patient is still in good health fifteen years after the operation, 2 over thirteen years, 6 over seven years, 2 over six years, 4 over four years and 3 over three years. Another patient had recurrence after extirpation of the rectum in 1886 and has had two later operations performed. The last was fifteen years ago and the patient lived free from recurrence to this year, when he succumbed to apoplexy. Only 3 of the patients are incontinent, but 6 are only relatively continent after amputation and 2 after resection. Complete continence is known in 9 after resection.

72. **Urethral Calculi.**—Finsterer remarks that he was able to find records of only 14 instances of calculus formation in the female urethra, while more than 200 cases in the male have been published. In a series of 76 cases in males the age was under 20 in 10, under 30 in 7, under 40 in 8, under 50 in 15 and between 50 and 80 in 14. The prognosis is generally favorable, although Rörig has recently published a case in which a very large stone in the prostatic urethra caused fatal injury of the rectum. Attempts to crush the calculus in the urethra are dangerous. The stones were multiple in a number of the cases.

74. **Urinary Calculi in Egypt.**—Goebel states that lower Egypt is a hotbed of lithiasis, especially of urinary calculi. Lithiasis is comparatively rare in upper Egypt. The difference between these two provinces in respect to lithiasis coincides with the difference in the prevalence of bilharzia affections, for which lower Egypt is likewise a hotbed. Goebel is inclined to attribute etiologic importance to the bilharzia in respect to lithiasis. The desquamation of epithelium in the bilharzia bladder is very profuse. He remarks that it might be interesting to classify the countries in which lithiasis is prevalent by the predominant ages of the persons affected; in some countries the subjects are mostly children, in others middle-aged and in others elderly persons. Statistics from Italy, Russia, India and Turkey mention a great preponderance of children. In Germany and Austria the great majority of persons affected were over 50 in Stein and Löbstein's statistics. Goebel describes his experiences with 75 cases in Egypt.

75. **Murphy Button.**—Gelpke has used this button in 54 operations on the digestive tract. His experience has taught him not to use it in operations on the large intestine, in case of chronic obstruction of the small intestine or in a gastroenterostomy for innocent stenosis of the pylorus. Under other conditions it has proved its usefulness abundantly. The edges of the button should be well rounded and the spring should work unhampered. The necks should be amply long and the lumina should be as large as possible. The hooks on the male part should not be soldered, as otherwise they are injured by boiling. He relates certain minor details in the technic, among them his practice, after posterior gastroenterostomy, of tying a silk thread around the afferent intestine just above the button, half closing its lumen. Bile and pancreatic juice pass along unhindered, but the thread prevents the button from dropping into the afferent loop.

76. **Plastic Operation After Removal of Breast.**—If the defect after excision of the mamma is very extensive, Payr transplants the sound mamma in its place, taking it up with the base to the flap extending above the manubrium. The cosmetic result is especially good, as he shows by illustrations. In case of a moderate defect, with not far advanced disease and plump outlines, he takes a sickle-shaped flap on the median side of the defect, the base extending upward. It is possible to push along this flap in such a way that the wad of skin protruding in the center simulates a nipple.

77. **Trauma and Cancer of the Stomach.**—Menne discusses the importance of trauma in the etiology of cancer of the stomach, giving the particulars of 10 cases in which a medical certificate incriminated trauma as a causal factor. The trauma may start the cancerous growth or it may transform an embryonal predisposition or "Anlage" into an active process.

Münchener Medizinische Wochenschrift.

78 (LIII, No. 17.) *Ueber Galopp-Rhythmus des Herzens. F. Müller.

79 *Ueber die Wirkung des Alkohols auf die Ausscheidung der Azeton-Körper (elimination of acetone bodies). O. Neubauer.

80 *Ueber den Färbeindex der roten Blutkörperchen ("stain index" of red corpuscles). E. Meyer and A. Heincke.

81 Ueber punktierte Erythrozyten. E. Meyer and D. Speroni.

82 Das Verhalten der weissen Blutzellen während des Asthma-Anfalles (behavior of white cells in asthma.) A. Heineke and E. Deutschmann.
83 Ueber das Verhalten der Typhus-Agglutinine im mütter-lichen und fötalen Organismus. C. Stäubli.
84 Zur Kenntnis der Pseudobulbarparalyse. H. v. Hoesslin and T. Selling.
85 Main de prédicateur bei multipler Sklerose ("preacher's hand"). T. Selling.
86 Ueber Neuromyelitis optica. Kerschensteiner.
87 Influence of Temperature on Elimination of Sugar.—Ueber den Einfluss der Temperatur auf die Zuckerausscheidung. W. Brasch.
88 *Zur klinischen Diagnose der Lungen-Abszess. H. Rieder.
89 *Graphische Darstellung des Perkussions-Schalles. R. May and L. Lindemann.
90 Electro-Physiology of Heart.—Ueber die direkte Ableitung der Aktionsströme des menschlichen Herzens vom Oesophagus, und ueber das Elektrokardiogramm des Fötus. M. Cremer.
91 *Tuberkulosebehandlung in Volksheilstätte (sanatorium treatment). Penzoldt.
92 *First Heart Sound.—Der erste Herzton. R. Geigel.
93 Ueber die einfachte Gaulenröhre als Anreicherungsmittel und die Bakteriologie des Blutes bei Typhus sowie Paratyphus (bile as culture medium). H. Kayser.
94 Zur Ausgestaltung der Orthodiagraphie. F. M. Groedel.

78. Gallop Rhythm.—Möller concludes this postgraduate lecture with the remark that the prognostic significance of gallop rhythm is not so grave as some are inclined to believe. In case of goiter, of cardiac neuroses and even in typhoid fever the phenomenon does not indicate danger. Even in a slowly progressing contracted kidney, as also in many heart affections, such as those in alcoholics, for instance, he has observed that patients remain in comparatively good condition for many years after the appearance of the gallop rhythm. However, it repays study and is frequently an indication for energetic treatment, especially for digitalis.

79. Action of Alcohol on Elimination of Acetone Bodies.—Neubauer concludes the reports of his tests with the statement that they justify the recommendation of moderate amounts of wine in combating severe diabetic acidosis in cases which present no special contraindications (nephritis, for example).

80. "Stain Index" of Red Corpuscles.—Meyer and Heineke think that the behavior of the "stain index" is a valuable criterion in regard to the vitality of the elements of the blood and of the blood-forming organs. The "stain index" shows a remarkable analogy between the blood findings in the fetus and in severe anemia. It is also able to determine whether the anemia is inducing vigorous reactive blood formation of the embryonal type or whether the aplastic type is present. The particulars of a few cases of leukemia are reported and the suggestion made that the stain index of the red corpuscles might afford valuable information in other affections besides pernicious anemia and leukemia.

88. Abscesses in Lungs.—Rieder's patients presented irregular fever without any chills, with uncertain percussion and auscultation findings. The sputum contained no elastic fibers nor albumin nor characteristic crystals, although it was unusually abundant. Signs of a cavity in the lungs could not be definitely determined, merely tympanitic resonance and scanty râles, with occasionally transient bronchial breathing, although the focus was quite extensive. The presumptive diagnosis of an abscess was confirmed by the Roentgen findings, which are reproduced. Treatment was expectant and symptomatic, merely expectorants and disinfecting inhalations, trusting to Nature for spontaneous opening of the abscess into the air passages and for evacuation of the pus in the sputum, which duly occurred. These experiences emphasize the value of radioscopy for diagnosis of abscess in the lungs. They also suggest that metapneumonic and primary abscesses in the lungs are of more frequent occurrence than hitherto supposed, clearing up many dubious diagnoses in the past. The anatomists accept cicatricial formations in the lungs as necessarily of tuberculous origin, but the Roentgen rays may prove this conclusion to be too sweeping.

89. Graphic Representation of the Percussion Findings.—May and Lindemann present some cuts showing actual photographs of percussion findings. The object is percussed about 10 cm. from a very delicate membrane, a soap bubble, made by dipping a metal ring in a strong solution of soap. The vibrations of the membrane under the influence of the percussion sounds are registered on a revolving sensitized film.

91. Sanatorium Treatment of the Tuberculous.—Penzoldt discusses various points in which still better results might be obtained from sanatorium treatment. The choice of persons to be admitted to the sanatoriums is a very important point, and he thinks that the co-operation of the hospitals would aid materially in this respect. Persons convalescing from pleurisy should be transferred to the sanatoriums unless a tuberculous soil can be positively excluded.

92. The First Heart Sound.—Geigel has been making a study of the first heart sound in normal persons. His hearing is exceptionally good and he announces that there are always two diastolic heart sounds, generated at the aortic and pulmonic valves, and only two systolic sounds at the ventricles, four in all. Besides these there is always a systolic vascular sound to be heard somewhere in the heart area, following the first sound. What is heard at the aorta is generally the first heart sound with the following aortic sound or brief aortic murmur. When the first sound is heard pure, whether at the aorta or the apex, it is only necessary to auscult between and a place will always be found where the double phenomenon is audible. From this point the first part disappears or becomes lighter toward the aorta, while the same occurs with the second part toward the apex.

Virchow's Archiv, Berlin.

Last indexed XLVI, page 1656.

95 (CLXXXIV, No. 2.) Ueber Plasma-Zellen in dem entzündlichen Infiltrate eines Krebs-Tumors des Magens (gastric cancer). B. P. Sormani.
96 Multiple Primär-Tumoren. P. Frangenheim (Altona).
97 Zur Myelom-Frage. O. Lubarsch (Zwickau).
98 Zur Histologie der sogenannten "akuten-Leukämie." D. Vespremi.
99 Alkoholismus und Leber-Cirrhose (of liver). F. Klopstock.
100 Ueber des meningeale Cholesteatom im Anschluss an einen Fall von Cholesteatom des 3. Ventrikels. F. Scholz.
101 Valvular Hematomas on Heart of the Newly-Born.—Ueber die sogennanten Klappen-Hämatome am Herzen der Neugeborenen. Fahr.
102 Bacteriologic Study of the Blood in the Cadaver.—Ueber bakteriologische Blutuntersuchungen an der Leiche. M. Otten.

NEW PATENTS.

Recent patents of interest to physicians and pharmacists:

824087. Tooth brush. Solon E. Babcock, Plateau City, Colo.
824463. Tablet counting and filling machine. John W. and A. M. Ayers, New York.
824612. Apparatus for reducing dislocated joints. Ralph W. Bartlett, North Brookfield, Mass.
824686. Injecting-needle. Charles T. Daniel, Owensboro, Ky.
824471. Nebulizer. Anton C. Eggers, New York.
824539. Making an internal remedy. Richard Griese, Berlin, Germany.
824357. Aeth-oxy-phenyl-comphoryl imid and making same. Arnold H. C. Heimann and E. C. Clemmensen, Detroit.
824371. Hypodermic-syringe case. Henry C. Michie, Jr., Charlottesville, Va.
824450. Stethoscope. Theodor W. Tallqvist, Helsingfors, Russia.
824838. Indicating bottle. Earl Atkinson, New York.
824060. Eye-testing instrument. Willard A. Bates, Princeton, Me.
824846. Invalid-bed. Nelson Clement, Chicago.
825121. Means for tieing blood vessels. Albertus W. Frentzen and J. Shoemaker, Leyden, Netherlands.
825122. Calamedal sack. Carrie M. Greenwald, New York.
825224. Ligature holder. John E. Lee, Conshohocken, Pa.
824993. Ear-drum. Asbury O. Leonard, Detroit.
824738. Medicine bottle. Louis Perotti, Newark, N. J.
825165. Abdominal support or binder. Mattie A. Watson, Chicago.
825291. Adhesive plaster and making same. Perry S. Bauer, Chicago.
825798. Thermometer. Millard F. Becton, Jersey City, N. J.
825598. Fruit-sprupling machine. Lazelle Graham, San Jose, Cal.
825465. Litter carrier. Anton F. Jansen, Effingham, Ill.
825732. Emulsifier. Carl A. Janson, Chicago.
825659. Suspensory controlling device for artificial limbs. Thomas W. Klopp, Peoria, Ill.
825761. Vaginal irrigating device. Vicente Salcedo, Apasco, Mexico.
825953. Extracting potassium chlorid from seaweed. David M. Balch, Coronado, Cal.
826091. Syringe. Albert B. Dorman, Winthrop, Mass.
826029. Rarefied-air apparatus for the treatment of pulmonary tuberculosis. James E. Harper, Assumption, Ill.
826166. Magnesium compound of pinene haloids and making same. Albert Hesse, Berlin, Germany.
826165. Making bornyol. Albert Hesse, Berlin, Germany.
826172. Syringe. Charles J. Kintner, New York.
826515. Appliance for straightening big toe. Lemuel W. Litch, Lynn, Mass.
826047. Artificial eye. Emilius Muller, London, England.
826188. Syringe. Albert W. Nicholls, Chicago.
826377. Sanitary appliance. Raphael A. Sonn, Atlanta, Ga.
825946. Transportable fire-escape with removable stretcher. Jean A. Van Eesbeeck, Brussels, Belgium.
826073. Cushion for hernia-trusses. Wilhelm Wagner, Kreuznach, Germany.